FIGURE 1A

Nucleotide sequence of the partial PK-6 from *Physcomitrella patens* (SEQ ID NO:1)

GCACGAGCTCAATCCTCATGTTTCGGACTGTGGACTAGCTGCCCTTGCACCATCTGG

TTCTGAACGCCAGGTGTCGGCACAAATGTTGGGCTCTTTCGGTTACAGTGCCCCTGA

GTACGCCATGTCTGGAACCTATACCGTGAAGAGTGACGTCTACAGCTTCGGTGTTGT

AATGCTGGAGCTACTCACTGGGCGCAAGCCTTTAGACAGCTCAAGACCACGATCCG

AGCAATCTTTGGTACGATGGGCCACACCTCAATTGCACGACATCGACGCCCTTGCAC

GAATGGTGGATCCGTCGTTGAAGGGCATCTACCCTGCTAAATCACTCTCTCGGTTTG

CTGATATAGTCGCCCTTTGCGTCCAGCCGGAGCCCGAGTTCCGACCCCCGATGTCTG

AAGTGGTGCAGGCACTTGTAAGGCTGATGCAGCGTGCGAGTCTGAGCAAACGCAGA

TCGGAGTCCGCTGTTGGGAATTGAGTCGAACGAGCCATCTGAGACTTCACCTTTGAG

AGTACTGAAGCGCCCACTAGCCTAATCGTGCATCTTTGGCCATCTCGTTTCTGAGTG

GAACACAAAGCTGGGTATATTCTTTGGTGGTTAAGCAACCATTTGTCCCAATTTGAA

CTTCCGCTGGNGAAGGTCTGTATGTTGAGAAACGATGCAAAGCGTTCGCGTGGTNTG

CTTGAACTTCAAA

FIGURE 1B

Nucleotide sequence of the partial PK-7 from *Physcomitrella patens* (SEQ ID NO:2)

GGCACGAGCCGAACTTCAGCAGCTTCTTCACATCTTCAGGTTGCTTGGCACCCCGAA

TGAGACAATCTGGCCTGGTGTTAGCCAGCACCGTGATTGGCACGAGTTTCCTCAATG

GAGACCACAAGATCTGTCCCTTGCTGTTCCCGGACTCAGCGCGGTTGGCTTAGACCT

TCTCGCCAAAATGTTGGTATTCGAGCCCTCAAAGAGAATCTCTGCCAAAGCCGCCTT

GAGCCATACTTATTTCGCTGATGTTGATAAGACAGCAACCTAAACACAACAGAACA

ATTCAAGAGAACCAGGTAACCTCTACCTGTCCAAGACGAAGGACATCTAACTCTTCA

GTCAAACTTGGCCAATCATGCTGATTGGGAATTGAACCACAGGAACGAGGTGGGCA

CCGTGGTTCGCTGTAGCATACAAAGTAGTCTGGAAGACTTGACATCGTTAGCTGGCA

ATGCAGTATTTTGGAAATACAATTTTTCATTAAAAATCTCCTAAAGATTCAATATTTG

FIGURE 1C

Nucleotide sequence of the partial PK-8 from *Physcomitrella patens* (SEQ ID NO:3)

GCACCAGACTATGACAAGCGCACGCCCTTGCACATCGCCGCGTCCCTGGATTGTGTC

CCTGTTGCTAAAGTCCTGCTTGCGGAAGGAGCAGAGTTGAATGCAAAAGACAGGTG

GGGGAAATCTCCGAGAGGCGAGGCGGAGAGTGCAGGATACATGGAGATGGTAAAG

CTGTTGAAGGATTACGGGGCTGAGTCACACGCAGGTGCCCCGAGGGGCCACGTTGA

GAGTCTGATTCAGGTTGCCCCTCCGTTGCCTTCTAACCGCGACTGGGAGATCGCTCC

GTCGGAGATTGAACTTGATACCAGCGAGCTCATCGGCAAAGGCTCCTTTGGAGAGA

TTCGGAAGGCGCTTTGGCGCGGCACACCCGTCGCTGTGAAGACAATCAGACCTTCTC

TGTCCAACGACAGAATGGTCATCAAGGACTTCCAGCACGAGGTGCAATTGCTCGTA

AAGGTTCGGCACCCAAACATTGTGCAGTTCCTCGGGGCTGTTACCCGTCAAAGACCT

CTCATGTTAGTCACCGAGTTTCTGGCAGGGGGGCGATTTGCATCAGTTGCTGAGGAG

CACCCTAAATTTGGCTCCTGACCGCATCGTGAAGTATGCCCTCNACATAGCTCGCGG

CATGTCTTACTTCACCATCGGAGCAGCCCA

FIGURE 1D

Nucleotide sequence of the partial PK-9 from *Physcomitrella patens* (SEQ ID NO:4)

TCCAGCCCATTTGGTTGGCCACACACAGCTGTTCATGAGTCACCCGCTTCAGGNTGA

ACTGAAGAAACGTAACTCCGTACGGCTATTTTACCAAATTTTCAAGCTCGTTGTCCC

GCCATGATCCAAATGGAAGCTCAGTTTGCAACATGAAGTACATTGAACACACCTACC

GCCCACCAGTCAGAAGCCAGGCCATGACCTTGTCCTTGAATGATCTCGGGTGCTAAG

AAATCAGCCATGCCACAGACTGTGAAAGTGCGCTCATCCGACATTTGCTTTGCAAAC

CGAAAATCAACCAGCTGAAGTCGTCCTTTCCGATCTATCATAAGAACATCGGGAGA

GATGCCACGATATACAACGCCATCCTTGTGCAGAAGTTCGACGGCTAATACCACGTT

GGCGACCAGAAAACGAGCTGAGTTCTCGTCTAAAGGTGACCGAAGTAGAAGTTCTA

GAGGCCCAGCTAACACACAATTAAGAACGAGTGCCACATTGTCACTGTCAATAGGG

GTGGCCAAGAGATGCGGCACGAATGGGGAAGGCCTCAGTTGCTTGAAAAGAGTTCT

CTCCAATAGGACTTGGCCCTCCCGACCGAGTCTCTGAACTTTACGTCTCTGGTACCTT

TTCATGCTTATGACGTCATCTGATTTCTTGCAGAGCACCACACCGACATCACAGCAA

TCGGTTGAATAGACCTGGTGCCGATTCCT

FIGURE 1E

Nucleotide sequence of the partial CK-1 from *Physcomitrella patens* (SEQ ID NO:5)

TATGCCCATCTTCTCATACTCAGACCAGATCCTCTATTTCAATTACAGAAGAAAGTT

GCTTGTGCAACGTATTGAAATCATCACCGTCATGGGCTTTCCGAGTAAAAATTCTTG

TAATGGATAAAGTCATTTCTAGTCTGATCCATACAAGCTACCGACACAATGCTAGAA

GCCTTGATTTACACACTACACACTAGAGAGTCTACAACTCTTTTCCTACACTCTGCTT

AGTTGCCTCATCCTCAACTCCATAAACCCCCATTCACAATCATGTAAGACTTGAGAG

AGGGAAACAGTAAGCAACCTTGTGCTATTTTAGTACCAGAGCAGAGGATGAACCAC

TAGTCCTCCCAACGTAAGCCCTAATTCGCCGCAACAACCTCACGACGGAACTCCGAC

TTGGTCAAGGGTGGACAATATGATACATTCGAAGGTCGATTTTGCAAATGGGACGA

AGCAGCGGAATTCTGGCTGCGCACTGATTGCAGAGAGCCATTCTGGGGGAGTTGAG

TATACACAGTCCAGTCGTACACATGGTCGAGCTGGAATTTTTTCTGAATGAAAAGAT

CACGGAACAAGCTTCGGAGGTACAGTAGTCAGGCTGCTCGTAAAAACCTANACTTC

GCGGCGTGGTGCAAAAAGTCGGCAAATTGACTGGGATACCCATCACAAAGCTCCTC

CCACAGTGGGGGTCATCTTGATTTTGTTGTGCATGTACTCGTGTTGCTTCTGGTCAGT

GAGGGCGTTGCCCGCCCTTCCCTTGCCATGGCAAATTGCCTCTTAGAAAGTACATAA

GAATGTAACCCAAGTGATTCTATGTCATCTCTTCTACTGTGCTCGATTCCTCTGTGCT

GATTCCTACTAGCGTACCGTGCCGTCCCTGTGAAGCTCTTCCTATCTCGGTAAGGGA

TATGCCTTCGTGTTGCCGGGTCCATGTACTCCTTTGCCAAGCCAAAATCTATAATGA

ACACTTGGTTTCCTTGCCGACCGCAGCCCATGAGGAAGTTATCCGGCTTCAGGTCAC

GGTGAACGAGCCCTCGAGAATGCACGTATTCCACCCGGTCAATCATTTGGTAACCGA

GCATAATCACGGTCTTCAACGAAAACCTTAGCCCACACACCTTAAAGAGGTGCAAC

AGGTTCGGCCCCAATAGGTCTAGCACCATCACATTGTAGTCTTCTGCTGCTTTTCCGA

FIGURE 1E Continued

ACCATCTCATGTTGGGCACTCCCTTCCCACCCCGCAATATGTTGTACAAGCGCGACT

CGTGCATTAACTCTCGTGC

FIGURE 1F

Nucleotide sequence of the partial CK-2 from *Physcomitrella patens* (SEQ ID NO:6)

TTTTTTTTTTCCAATAGATTTGCATTACATAACTCCAAGTTATGATATGTACAGGTTA

GCAACAAGCTAATGGCTGCAAGCAGTGAACATACTACCAAGGGAGAGATTCTCACT

CCCTAGACTTCATCCTCGTACGTTACTTGGCAAGGATTATGGTTTAGTGATAAAAAG

CTTCACAAGCCGGCAAGCATGCTGGTTGCTTCTGCTGCAATCTAATGATTATTTCCTT

AGGAATCGTATGGCAGAGAGCTACCACACAAAGCACTGACAATGGTTTGATGGTAA

CAAGATAGAGATCCATTCATTCCTAAGTATGAGAGACCTGTAGTCTTAGCACCATTG

TAGGACAGAACCACCGTTTTCCCCTCAATCAGGCTGTTGCCAAATGTAGAGCAACTC

TCATCAACATAACAAGAGGGTTTGATAGAAGACAGAGCCCGGCTATATAACCACAA

GCCCTGCGCCTACCTTATAACGGCTTGGATCCACCTCAACAGAAAGTGATTCAACTC

CCTTGATACCGGCTTTCGTAAATCCTCAAGTTGGCAGATGGCGGTTGTGGATGGCGG

CTAGATATCCGCTTTGGGTCCGAAGTAACTGGAGAGCTCCTCTGCATCCCTGCTGAC

GACCGTAAGCTGGTGGGACCAAGCTTACTGCTCCCTGTTCGAGAGGAATCTACGACT

TCTGCTGATGCCCCTGAGGGCCTGCTGCTAGATAGGACAGCTCGCCTGGAGGAAGA

ACCCCCCCGAGTTGCATACGAAGATGTATGCATGCGCTCTGGTTCTGACACAACAGC

AAGAGCAGAATCCTTAGCAGATTCATCAAGTCCAGGACTTTTGTGCTTAGATGAGTC

CAAAGCATTTGCGACCCCGGAGCCATTTGCTCCTCCAGGAAGCCTGCGCCGAGAAG

GATCCATTGGTTCGGTGGGCCGCTGCAGGTCTCGGCTTCCTGTAGCCCCAGTTCCAA

GTGCACCACTGGTTTGCCCTGCAGAAGCACCCAGTCGAGTTGAACTGCCACCGGAA

ATTTGTGACTGCTGGTACTTCAGAATTGTCCAGTCAAAAACGTAGTCAAATTGAAAA

CCTGTAAAACTATTTCCAGTTTAGGCAAACAGAAGTGGCACTGTAATAAACTGAAA

ATCATCAAACATTCACAAACTATCTGTTCGTTGATAGAGCATAGTAAAGTCTGCGCT

FIGURE 1F Continued

TAGGATCAAGTCTTGATACATTACAATGCCCAAGCAAGAGTGAAACCTACAAAAGT

TACAGTTTTCATACCCTCACGAATAAAGAGGTCACGGAAGATTCTTTTCAAATATGC

ATAGTCGGGTTTGTCATCAAAACGCAAGGACCGGCAGTAGTGGAAGTACGCTCGTG

CGAATTCTGAAGGATAATTTTTACAAAGGACCTCAATGGGCGTGGACATTTGTTTTC

TCACTGATCTTCTCGTACTTCTGCTTCTTGGTTCCCGCTTTCAGTCCTTGCCCATGGAA

GACTGCCTCTCAGGAAGTACATGAGCACATATCCAAGAGATTCCAAATCATCTCGTC

TGCTTTGCTCAATACCAAGATGAGTGTTGATGCTTGCATACCGAGCAGTCCCTGTCA

GATTTTTGTTCTCCCTGTAGGGAATATGCTGATGCGTGGAAGGGTCGCGGTACTTCTT

GGCAAGACCAAAATCAATAATGTAGACCTGGTTTGCTCGCCTACCAAGCCCCATTAG

AAAATTATCAGGCTTGATGTCTCTATGAAGAAAGCTTTTCGCATGCACATACTCCAC

TCTGTTGATCAGCTGGTCAGCAAGCATGAGAACAGTCTTTAAAGAGAACTTCCGGCT

GCAGAAGTTGAAAAGGTCTTCGAGACTTGGCCCCAACAGATCCAGAACCAAGACAT

TGTAGTCTCCTTCTATCCCGAACCATCCTCGTGC

FIGURE 1G

Nucleotide sequence of the partial CK-3 from *Physcomitrella patens* (SEQ ID NO:7)

CGGTGGGGCGCTCCCCAATATTTTATCCCCGGGGCTGCAGGGAATCCGGCGACCAGT

NTTTGAAGGTGTCAACGCCGTGAATAGTGAGCGTTGCGTTATGAAGATTTTGAAGCC

AGTAAAGAAAAAAAAAGATCAAAAGAGAGATCAAGATTCTGCAAAACCTTTGTGGAG

GGCCCAACATTGTGAAGCTTCTGGACATTGTCCGTGATCAGCAATCGAAGACACCCA

GCCTAATTTTTGAGTATGTGAACAATACTGATTTCAAAGTGCTCTACCCCACTCTTAC

AGACTTTGATATCCGATACTACATTCATGAGCTGCTCAAGGCTTTGGACTATTGCCA

TTCTCAAGGGATTATGCACAGGGATGTGAAGCCACACAACGTGATGATTGACCATG

AGCAGCGGAAGCTTAGGCTTATTGACTGGGGACTTGCCGAATTCTATCATCCTGGCA

AAGAGTATAATGTGCGTGTTGCCTCTAGGTACTTCAAGGGTCCTGAGCTGCTGGTTG

ATCTTCAAGATTATGATTACTCTCTCGACATGTGGAGCTCTGGGGTGCATGTTTGCCG

GCATGATATTTCGGAAGGAGCCATTCTTTTATGGGCATGACANTTCATGATCAACTT

GGTGAAGATCGCTAAGGTGTTGGGAACTTGATGAATTGAATTCCTATCTAACAAATA

CCGCTAAGTGGACCCCATTGGAGCACCTGGTGGGGG

FIGURE 1H

Nucleotide sequence of the partial MPK-2 from *Physcomitrella patens* (SEQ ID NO:8)

GCACGAGGAACTAACGAATTGTCATTCTATAATCCAATAGTGTAATCACACGGGGG

GGAATAAGTTGCAAAACCATACAACGCCGGGATAGCGTTGTAGCCACCTAAAGAAT

TGAGAGTAGGCCTTACAACTTGAGATGAAGTGTGAAGTGGTACTGCACCATATCATC

AGGACCTAAGCTGCAATCCAGAGCCTCCCTCCAAATGAGATCCCTGATAGGCTCCTC

CGAGATAGAGGGCTCCTCGAAGCCAAACTCGAAGGGAGATACCGAGCCAGGCTCAT

CGTTGATGTCATGAAGTGAAGCTTAAATAAGGGTGCGCCAAGGCAGCTTCCACTGTG

ATTCTTTTCGCTGGATCAAAGACCAGCATCTTTTCAACAAGATCAAGAGCAGAACGA

TTAATGCCTCTGAACTTCTGGGTTAAGGGAATAGGCGACTGTCGAGGCAGGTGCTTG

ATATACCGCCTAGCATTGTCGCTTCTCAAAAACCCAAGATCCCTATCTTCAGGAGTT

CCGATGAGTTCTGTAATTAGGCGGAGCTGATGCACATAGTCTCTCCCAGGGAACAAC

GCAGATCGGTTAAGCAACTCCATGAAGATGCACCCCACAGACCAAATGTCAATAGC

TGCAGTGTATGCTGAACAATTCAGGAGCAGCTCTGGAGCTCTGTACCACCTCGTTAC

AACATACTCAGTCATGAAATCCGTTTCAGAGAGAGTGCGTGCCAAGCCAAAATCTG

CGATTTTCAAATCGCAATTGGCATTGACGAGAAGGTTGGTGGGCTTCAAGTCCCGGT

GCAAGACGTTCGCCGAATGGATGTACTTCAAGCCCCGCAAGATTTGATACAGAAAA

TACTGACAGTGGTCTTCTGTGAGAGCTTGATTTGAACGAATGATCTGGTGTAGGTCC

GTATCCATCAACTCGTATACAATGTACACGTCGTTGAAATCTCGTGC

FIGURE 1I

Nucleotide sequence of the partial MPK-3 from *Physcomitrella patens* (SEQ ID NO:9)

CGGCACCAGCCTCGCTGGAGACCGACCATCGAAGCACCTTAAGCTCGTTTTCATTCG

GCATTGCTTGCGAGCACTTCGACTTCCTAGAATTTCAATAGACCTAATGGAATCGCC

ACTCCCTAATCTTTCCGGAGAGGCCTTATCGCCGACGGCAACTGCCGAAGACGAGAT

TACTCAGATGATACTAAAAAGTGCCGCAAGGTCCGAATTAGGAATGTATGTTTCGAA

GAGACAGGAATTCTATCTTCGAAGAGCGCGGAGGCGGCGTAAGTTTGCGTGGAAGC

CGGTTTTGCAGAGCATCTCCGAGATGAAGCCTGTCATGGAATTCCACACTCCGATGG

CTTACCGGGATAGTGGGTCTCCGCCGAAGAACGCCTCTACCCCATCCTTACCTGGCC

CGAAGAACATTTCACCGCCACGACAAGTGAGTGTCCCGCAAAGGAGCAGTCCTCCG

CCGAAGAACGTCTCACCACCTCCCCAGCCCGGCATTTTGTAGCGCGGACTGCGATCG

AAGTATTCTGCTGCATCTCAGCAAGTTCAACGAAATCGAGGGCAACGCGAAATCTCT

TTTATATGGCGTAGTTTGTGTCTCCGACTGGACTCCTATCTATCCCCATCGAGATAAC

TGATTCGGTGGATAATTTCTCCAAATTTTGGCTAACNCAAGAANCTCAAGGGCGAAT

FIGURE 1J

Nucleotide sequence of the partial MPK-4 from *Physcomitrella patens* (SEQ ID NO:10)

GCACGAGGTTGGTGTAAGTTATTGATAGTGCTGTGCAATTCACAGTTTTGCTACTCC

GGTAGGTCCGACCTCTTCAATTGTCAGTTTAAAAACTCTAAAAACATTTGAGAAAAG

TGTTGAAAAATCTCCGTGAGGAAATTCCTTGTCGCAAGACGTGAAAAAAAGAAGAA

AGAAGATGGAAATATTGTTTTGGGTATCGAAGAAGTGTTCGATGCTGTGCAATAAG

GAAAGAAAAAGTGCAGGTAACATAAAAAGCTAGCATGGTGATGATAATATAAGACC

CCGATTAACACACTTATGGATTGTTTCATGAGCTGCACGTTCTCAGCGACAAATGGG

GCTCATTGAGAAAACTCCACTTTCTATAAGGTTGGGAAACGAGCGTTTTTTTTTTGA

AGATGTTTTTTCCGTCAATCTGATTTGATATCGTTCTCAACTTGACCACATATGACTA

TATAAGGAAAAGGCATTGAGAAAGTGGCGGATTGGCGAGGTAGTTCGACCATGCTT

TTGGTAAAGTCCCTTGAAGTTCAGTGGTGGATCAGGCTTGTGGTAGTGACAGTCTCT

GCACGCCATGCGAGGCTAACTTTAAGTTACAAAATCTTGCTCAAATGGTACTCTTCC

TCGTTGTACTTTTGCAGGAACGGATGTTTAAGTAAATCAGTAGTTGATGGTCGTTCA

CTGGGACATTTCCGGATGCAGGATTCAATAAAAGAACAAAATTCGGGGGAGAATTT

GTCAGGGGATGCGGCTGCGGGGGGTTGATTAACTATACATTCCATGAGGATGAAGA

AATTTTGCCAACCCTCTTCCATTCCAGCTGGTTTGTATGGGAAGGTACCCAACGCAC

ACTCCAAAAGAGTCAATCCTAAACTCCATAGGTCACTGTCGTATGCATACGAACGCC

CCTGAAGGCGTTCTGNCGACATATATGTGCAAGTCCCAACGAACGTGTCTCGCTGGG

CCAAGGAATGAACCAACACAGCACTGACACCAAAATCAGATATTTTGACCTCACCC

TTGTGATTGATGAGGAGGTTGGAGGGCTTTATATCACGATGTATGATGTGCCTGACT

TGGTGTAGGTATTCCAATCCCTTCAGAACTTGACTAGCAATGACGGCCAAATACGGC

TCAGGTATNTGCTTTCTGGTGC

FIGURE 1K

Nucleotide sequence of the partial MPK-5 from *Physcomitrella patens* (SEQ ID NO:11)

TCCCCGGGCTGAGGAATTCGGCACGAGCGGTTGATCCTCACCCTTGGGAAGGACCCT

GGAATTGAGTAGCGTGCGGAAGCTGCATCGATCCGGAAGAGACGATGAGTAGGAGA

GTGAGAAGGGGAGGTCTTCGCGTCGCGGTGCCGAAGCAAGAGACTCCCGTCAGCAA

ATTTTTGACTGCCAGTGGAACTTTCCAGGATGATGATATCAAGCTCAACCACACCGG

GCTTCGCGTCGTCTCTTCAGAACCTAACCTTCCTACGCAGACGCAGTCTAGCTCCCC

AGATGGGCAACTGTCAATAGCAGACCTGGAGTTAGTGCGGTTCTTAGGAAAGGGTG

CGGGTGGAACCGGTGCAGCTTGGTCCGGCACAAATGGACCAATGTCAATTATGCAC

TGAAGGCGATACAAATGAATATCAACGAAACAGTGAGGAAGCAGATTGTTCAGGAG

CTGAAAATCAACCAAGTGACGCACCAGCAGTGCCCTTATATCGTGGAATGCTTCCAC

TCCTTCTACCACAACGGCGTCATATCCATGATCCTAGAGTACATGGACAGGGGCTCG

TTGTCCGACATTATTAAGCAACAAAAGCAGATACCTGAGCCGTATTTGGCCGTCATT

GCTAGTC

FIGURE 1L

Nucleotide sequence of the partial CPK-1 from *Physcomitrella patens* (SEQ ID NO:12)

GCACCAGCCGAGTCGGGCATTTTTCGTGCGGTGTTGAGGGCTGACCCGAGCTTTGAA
GAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTCGTGAAGCGTCTCCTG
AATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCATGGATT
CGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTGAGGAAT
TATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAGACTTTA
ACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCAAGTAAC
AACGGTCGTGTTACTTTTGAGAATTTCAGACAGGCACTGCTGAAAAATTCAACAGAG
GCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTTCATTTC
GCACCAGCCGAGTCGGGCATTTTTCGTGCGGTGTTGAGGGCTGACCCGAGCTTTGAA
GAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTCGTGAAGCGTCTCCTG
AATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCATGGATT
CGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTGAGGAAT
TATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAGACTTTA
ACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCAAGTAAC
AACGGTCGTGTTACTTTTGAGAATTTCAGACAGGCACTGCTGAAAAATTCAACAGAG
GCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTTCATTTC
AAGAAAATGGACTTTTCAGAGTTCTGTGCAGCGGCCATTAGTGTTCTCCAGTTAGAA
G

FIGURE 1M

Nucleotide sequence of the partial CPK-2 from *Physcomitrella patens* (SEQ ID NO:13)

GCACGAGCTCCTGCATCTCCCCCTCCTTCTCCTCCTCATCATTCTGGAGCCCAGCGAA

CTGCGATCTGAGATTCCAACTTGGAAGGGCCTCGCGTAAGCACCGGAGCTCGTTTCT

TACGCTTTTGCGCCTCGCGATATTTGTACATTGTTTCCTCTGGTTTTATTCGATTCCGC

CTCTGAAAATGTGAACGGGCTGCAAGCTTGGTTTTGGAGCAACGTTGGAGCATTGAA

GGGTTGCGCTCGTCCCTGCCCATTCCTCGCTTCTGCTCTGGCCTATGTCATGACGACG

TGAAGGAGAGGATTTGAGGGTTTTGCAAGTGATATAATCCTCCCCGAGGAGATTTCT

GTGAGTTGATTAACTTGGATCAGCGACATGGGGAACACTAGTTCGAGGGGATCGAG

GAAGTCCACTCGGCAGGTGAATCAGGGAGTCGGGTCTCAAGACACCCGAGAGAAGA

ATGATAGCGTCAATCCAAAGACGAGACAGGGTGGTAGCGTTGGCGCAAACAACTAT

GGCGGAAAGCACAAGCAGTGGTGCTCAGGCCGGAGAACGATCCACCTCTGCGCCCG

CTGCTCTGCCGAGGCCGAAGCCAGCATCGAGGTCAGTATCCGGTGTTTTGGGTAAGC

CGCTGTCAGATATTCGTCAATCTTACATCCTGGGACGGGAGCTTGGCCGAGGGCAGT

TCGGAGTGACTTACTTGTGTACTGACAAGATGACGAATGAGGCGTACGCGTGCAAG

AGCATCGCCAAACGGAAACTGACCAGTAAGGAGGATATCGAGGATGTTAAGCGGGA

GGTTCAGATTATGCATCACCTGTCGGGGACACCCAATATCGTGGTGTTAAAGGATGT

GTTCGAGGACAAGCATTCCGTGCATCTTGTGATGGAGCTCTGTGCAGGTGGCGAGCT

CTTCGATCGCATCATTGCCAAGGGGCATTACAGTGAGCGCGCCGCTGCCGATATGTG

CAGAGTCATCGTCAATGTGGTGCACAGATGCCACTCATTAGGGGTCTTCCATCGGGA

TCTCAAGCCAGAGAATTTTCTGTTGGCCAGCAAGGCTGAGGATGCGCCTCTGAAGGC

CACAGACTTCGGTCTGTCAACTTTCTTTAAGCCAGGAGATGTGTTCCAGGATATTGTT

GGAAGTGCGTATTACGTGGCCCCTGAAGTTTTGAAGAGAAGTTATGGTCCTGAGCTG

FIGURE 1M Continued

ATGTTTGGAGTGCAGGCGTGATTGTGTACATTCTGCTGTGTGGTGTACCCCCCTTCTG

GGCTGAAACTGAGCAGGGTATCTTTGACGCTGTGCTCAAAGGGCACATAGACTTCG

AGAACGAGTCCATGGCCGAAAATCTCCAACGGGGCTAAGGATTTGGTGAGGAAAAT

GCTAAACCCTAACGTGAANAT

FIGURE 2A

Nucleotide sequence of the full-length PK-6 from *Physcomitrella patens* (SEQ ID NO:14)

ATCCCGGGTGAGTATCACTTACGGTGGCGAGGGATGGCCTTTGGGGTAGGAGCTGG

TATATGCGGAGTCCAACAGAAGCTTGTGCAGGACTCTTGAGTTGTGCGTGCGAGGGC

TGAGTGCCGGAAAGGTATTTTCCGACGAAGAGTCAATGTGGGCGTGGACAAACGTT

TGAAGAGATGGGTGTGGATATGAAGGCTCCGGCTAAGCAGTCGCTGGGAGTCGGAC

TGCTCCTGTGCTCTGTAGTGATCCTCTCGGTGGTGAGCTCTGTGTATGGCCAAGTTCA

GACAGATCCAGTGGATACTACAGGCTTAATTTCCATGTGGTATGACTTAAAACAGAG

TCAATCTCTCACGGGGTGGACTCAAAATGCTTCTAACCCTTGTGGGCAGCAGTGGTA

CGGCGTTGTATGTGATGGCTCTTCTGTCACGGAAATCAAAATTGGAAGTCGGGGTTT

GAATGGAAATTTTAATCCTTCGTACTTTCAAAACGCTTTTAAAAAGCTTCGAATTTTT

GATGCTAGTAACAACAACATCGAAGGAAATATTCCTCAACAGTTTCCTACGTCTCTT

ACTCAAATGATATTGAACAACAATAAATTGACCGGAGGTCTCCCACAGTTTGATCAA

TTGGGCGCCTTGACAGTCGTAAACTTGAGCAACAACAATCTGACCGGCAACATGAA

CCCCAACTATTTCAATGTGATCGTGAATGTGGAAACCTTCGATGTTTCCTATAACCA

ACTTGAAGGCACTCTTCCCGACTCCATTCTAAACCTGGCCAAGCTTCGTTTCTTGAAT

TTGCAGAACAATAAATTTAATGGTAAACTTCCCGACGATTTCTCTCGGCTGAAGAAT

TTGCAGACTTTCAACATTGAGAACGATCAGTTCACGGGTAATTATCCATCAGGTTTA

CCCAGTAATAGCAGGGTTGGAGGAAATCGTCTTACATTTCCCCCACCTCCAGCCCCC

GGCACACCTGCTCCCAGGACTCCTTCTCCTTCAGGAACATCGAATGGATCATCGTCG

CATCTCCCTCTAGGGGCGATCATTGGAATAGCCGCTGGTGGTGCTGTGCTGCTTTTAT

TACTAGCACTCGGCATCTGTTTGTGTTGTCGTAAGCGGTCCAAGAAAGCATTGGGCG

ATCCAGAGGCCACGACCAGCAGCCGAAGACCGTGGTTCACACCTCCCCTCTCCGCA

FIGURE 2A Continued

AAGAGCCAGAGTGATCCCAGCAAGAGCATAGACAAAACGACGAAACGCAACATCT

TTGGCAGCAGTAAGAGTGAGAAGAAAAGTTCAAAGCACAGAGTATTTGAGCCAGCT

CCTCTTGACAAAGGAGCAGCCGACGAACCAGTGGTGAAGGCGTCTCCGCCCGTCAA

GGTACTGAAGGCTCCTCCTTCATTTAAGGGTATCAGCGGCCTGGGTGCTGGACATTC

GAAAGCAACAATTGGCAAGGTGAACAAGAGCAATATTGCAGCCACCCCATTCTCTG

TAGCGGATCTTCAGGCAGCCACAAACAGCTTCTCCCAGGATAATCTGATTGGAGAA

GGGAGCATGGGTCGCGTGTATCGTGCCGAGTTTCCCAACGGCCAGGTCTTGGCCGTG

AAGAAGATCGACAGCAGCGCGTCGATGGTGCAGAATGAGGATGACTTCTTGAGTGT

AGTAGACAGTTTGGCTCGCCTGCAGCATGCTAATACGGCTGAGCTTGTGGGTTACTG

TATTGAACATGACCAACGGCTGTTGGTGTACGAGTACGTGAGTCGTGGAACCCTGAA

CGAATTGCTCCATTTCTCGGGTGAAAACACCAAGGCCCTGTCCTGGAATGTCCGCAT

TAAGATTGCTTTGGGATCCGCGCGTGCTCTGGAGTACTTGCACGAAGTCTGTGCACC

TCCCGTGGTTCACCACAACTTCAAATCTGCCAATATTCTGCTAGACGATGAGCTCAA

TCCTCATGTTTCGGACTGTGGACTAGCTGCCCTTGCACCATCTGGTTCTGAACGCCAG

GTGTCGGCACAAATGTTGGGCTCTTTCGGTTACAGTGCCCCTGAGTACGCCATGTCT

GGAACCTATACCGTGAAGAGTGACGTCTACAGCTTCGGTGTTGTAATGCTGGAGCTA

CTCACTGGGCGCAAGTCTTTAGACAGCTCAAGACCACGATCCGAGCAATCTTTGGTA

CGATGGGCCACACCTCAATTGCACGACATCGACGCCCTTGCACGAATGGTGGATCC

GTCGTTGAAGGGCATCTACCCTGCTAAATCACTCTCTCGGTTTGCTGATATAGTCGCC

CTTTGCGTCCAGCCGGAGCCCGAGTTCCGACCCCCGATGTCTGAAGTGGTGCAGGCA

CTTGTAAGGCTGATGCAGCGTGCGAGTCTGAGCAAACGCAGATCGGAGTCCGCTGTT

FIGURE 2A Continued

GGAATTGAGTCGAACGAGCCATCTGAGACTTCACTTTGAGAGTACTGAAGCGCCCA

CTAGCCTAATCGTGCATCTTTGGCCATCTCGTTTCTGAGTGGAACACAAGCTGGGTA

TATTCTTTGGTGGTTAAGCAACATTTTGTCACAATTTGAACTTCAGCTGGAGAAGGG

TCTGTAGTGTTGAAGAAAACGAATGCAAAGCGTTTCGGCGTGGATGTGCTTTGAGAA

CTTACAAAACTCATCAAGACTTTGAAGATCTTTGTATTGCATCGAATCCTTTCAATCA

GTCTCGGGTAGGATCAGTTCCTCTGTATCGGATACCCTTTTCATCCTAACATGGGACC

CTTTTAATCCAGAGGATGGAGTGCTTGGAATAGTGACCTTGGTCGAGTTAACGC

FIGURE 2B

Nucleotide sequence of the full-length PK-7 from *Physcomitrella patens* (SEQ ID NO:15)

ATCCCGGGAGTGGGTGGTTGGACTGTAAGGAGCTAGCGTTTTAGAGCTACAGTGCG

GTTTGCTGTGTGAGTGAGTGAGTGAGTGAGTGCGTGAGTGAGGATGTCTGTTTCTGG

TATGGACAACTATGAGAAGCTGGAGAAGGTAGGAGAGGGGACTTACGGAAAGGTG

TATAAGGCCCGTGATAAACGCTCCGGGCAGCTGGTGGCGCTCAAGAAGACTAGGTT

GGAGATGGAGGAAGAAGGCGTCCCTTCCACCGCTTTGCGCGAAGTTTCGTTGCTACA

AATGCTCTCCCACAGCATGTATATCGTCAGGCTACTTTGCGTGGAGCACGTCGAGAA

AGGCAGCAAGCCCATGCTCTACTTGGTCTTTGAATATATGGACACTGATCTTAAGAA

GTATATTGACTTGCACGGTCGTGGTCCGAGCGGGAAGCCTCTGCCTCCCAAAGTGGT

CCAGAGTTTCATGTATCAATTGTGCACAGGGCTTGCCCACTGTCATGGCCACGGAGT

AATGCACAGGGATCTGAAACCCCAGAATTTGCTCGTCGACAAGCAAACCCGTCGTC

TTAAGATTGCCGACCTTGGTCTCGGTCGGGCATTCACAGTGCCAATGAAGAGTTACA

CACACGAGATTGTTACTCTATGGTACCGAGCTCCTGAAGTTCTTCTTGGAGCGACCC

ACTACTCTCTACCTGTGGATATCTGGTCTGTTGGGTGCATCTTCGCTGAACTCGTCCG

GAAAATGCCGCTCTTCACTGGAGACTCCGAACTTCAGCAGCTTCTTCACATCTTCAG

GTTGCTTGGCACCCCGAATGAGACAATCTGGCCTGGTGTTAGCCAGCACCGTGATTG

GCACGAGTTTCCTCAATGGAGACCACAAGATCTGTCCCTTGCTGTTCCCGGACTCAG

CGCGGTTGGCTTAGACCTTCTCGCCAAAATGTTGGTATTCGAGCCCTCAAAGAGAAT

CTCTGCCAAAGCCGCCTTGAGCCATACTTATTTCGCTGATGTTGATAAGACAGCAAC

CTAAACACAACAGAACAATTCAAGAGAACCAGGTAACCTCTACCTGTCCAAGACGA

AGGTTAACGC

FIGURE 2C

Nucleotide sequence of the full-length PK-8 from *Physcomitrella patens* (SEQ ID NO:16)

ATCCCGGGCAACGAGAAGCATTCGAGATGGCAGATGCGAAGGAGGAACTGGCGCTG

CGCACGGAAATGCACTGGGCTGTGAGGAGTAACGACGTGGGGCTGTTAAGGACCAT

TCTGAAGAAAGACAAGCAGCTCGTGAATGCTGCGGACTATGACAAGCGCACGCCCT

TGCACATCGCCGCGTCCCTGGATTGTGTCCCTGTTGCTAAAGTCCTGCTTGCGGAAG

GAGCAGAGTTGAATGCAAAAGACAGGTGGGGGAAATCTCCGAGAGGCGAGGCGGA

GAGTGCAGGATACATGGAGATGGTAAAGCTGTTGAAGGATTACGGGGCTGAGTCAC

ACGCAGGTGCCCCGAGGGGCCACGTTGAGAGTCTGATTCAGGTTGCCCCTCCGTTGC

CTTCTAACCGCGACTGGGAGATCGCTCCGTCGGAGATTGAACTTGATACCAGCGAGC

TCATCGGCAAAGGCGCCTTTGGAGAGATTCGGAAGGCGCTTTGGCGCGGCACACCC

GTCGCTGTGAAGACAATCAGACCTTCTCTGTCCAACGACAGAATGGTCATCAAGGAC

TTCCAGCACGAGGTGCAATTGCTCGTAAAGGTTCGGCACCCAAACATTGTGCAGTTC

CTCGGGGCTGTTACCCGTCAAAGACCTCTCATGTTAGTCACCGAGTTTCTGGCAGGG

GGCGATTTGCATCAGTTGCTGAGGAGCAACCCTAATTTGGCTCCTGACCGCATCGTG

AAGTATGCCCTCGACATAGCTCGCGGCATGTCTTACCTTCACAATCGGAGCAAGCCC

ATCATCCACCGCGATCTCAAACCCCGAAACATCATAGTGGACGAAGAGCATGAGCT

GAAGGTCGGCGACTTCGGACTGAGCAAGCTGATCGACGTAAAGCTTATGCATGATG

TGTACAAGATGACGGGGGGGACTGGGAGTTACAGATACATGGCGCCTGAGGTCTTC

GAACATCAACCCTACGACAAATCCGTCGACGTGTTTTCCTTTGGAATGATATTATAT

GAGATGTTTGAAGGCGTCGCTCCGTTTGAGGACAAGGATGCATACGACGCTGCCAC

ACTAGTTGCTAGAGACGATAAGCGGCCAGAGATGAGAGCCCAAACGTATCCCCCAC

AAATGAAGGCATTGATCGAGGATTGCTGGTCACCGTATACCCCGAAGCGACCACCTT

FIGURE 2C Continued

TCGTCGAAATCGTCAAAAAACTCGAGGTAATGTATGAGGATTGCTTATTGAGATTGC

CCAAAGACCGTCGTCATCTCCGCGACATCTTGCATCTTCGACGCAATCCTGCAGACT

CGTGATTGATCGGGCCAACCTTCGAGCTGATCAATCTAAGTAGTCAATGCCTTACTG

TGTCAAATTCAGCCTCCGCCGACAGATTGGCTATGGTTCAAGTGATTGGATTCTCTG

CTTCTCCAGAGCCAGAAACGACCCCCGTGCAATTTCTTCTCCGACGACCACATTGCG

ACATGAAGCACCAGACTTTGGATGTAGAAGGCATGGTCTACATGCTTTGCTGTGAGC

CTTGCACGTCTCGCAGGTTGATCTCTTTAACCAGCTTCTAGCCTTTCGCAATGGCTGC

ATCACTTAAGAAATCACCGAGTATCGTGATGCTCGTTAACGC

FIGURE 2D

Nucleotide sequence of the full-length PK-9 from *Physcomitrella patens* (SEQ ID NO:17)

aTCCCGGGCTGTGATGTCGGTGTGGTGCTCTGCAAGAAATCAGATGACGTCATAAGC

ATGAAAAGGTACCAGAGACGTAAAGTTCAGAGACTCGGTCGGGAGGGCCAAGTCCT

ATTGGAGAGAACTCTTTTCAAGCAACTGAGGCCTTCCCCATTCGTGCCGCATCTCTT

GGCCACCCCTATTGACAGTGACAATGTGGCACTCGTTCTTAATTGTGTGTTAGCTGG

GCCTCTAGAACTTCTACTTCGGTCACCTTTAGACGAGAACTCAGCTCGTTTTCTGGTC

GCCAACGTGGTATTAGCCGTCGAACTTCTGCACAAGGATGGCGTTGTATATCGTGGC

ATCTCTCCCGATGTTCTTATGATAGATCGGAAAGGACGACTTCAGCTGGTTGATTTTC

GGTTTGCAAAGCAAATGTCGGATGAGCGCACTTTCACAGTCTGTGGCATGGCTGATT

TCTTAGCACCCGAGATCATTCAAGGACAAGGTCATGGCCTGGCTTCTGACTGGTGGG

CGGTAGGTGTGTTAATGTACTTCATGTTGCAAACTGAGCTTCCATTTGGATCATGGC

GGGACAACGAGCTTGAAATTTTTGGTAGAATAGCCCGTCGGCAGCTTACGTTTCCTT

CAAGTTTCAGCCCTGAAGCGGTTGACCTCATTGACAAGCTGCTGGTGGTGGACCCAA

CCAAGAGACTGGGCTGTGACAGCCATGGATCGCTTGCCATAAGGGAACATCCTTGG

TTCCGAGGTATAAACTGGGACAAGCACCTCGATTGCAGTGTGGAAGTTCCTTCAGAG

ATCATGACACGCCTTCAGTTGGCCATAGACTTTCTTCCCGTGGATGATAGTTATCAA

GTGTTTGATCTCCAACCCGATGAAGACGATCCACCATGGCTTGATGGCTGGTGATAG

CTTGATGGCTCGTAGATCCCCCTTCTCCAAGCATCAATGGCACAGTACCGAATGGCT

ATAACAGAAGATGCACATTAAGTGCTCCATGAACAGATACCGTAGCGCTTAGGATTT

TTCGGTCGTCACAAATGACGGCTCTCTTGTGAGGTTCGAATGTTGTGTCACCCGATG

ATCTCTACTGGCACAAACCTCCAGGCTGAATCTTAAGGCCAGCTGTTTTAGGTGAGA

CGTTTACCTTGGTTCGAACTCACGCTCGTGTTGTTAAGCGCGAGTCGATGATGTATG

FIGURE 2D Continued

AAATGACGGTGTTCCTTGAAAGTCTTGAAAGGCAATCAATTCGCTTATGTGTGTCCC

TTCCATGTGGTCATTAGGGAAGGGAACCGCTGCACTAGTCAGTAAACGAACATGGC

TTCAATTGTATAGCATAGCGGTAGAGGTTTCGTACGAAATGTGGTTGCAGTCGGTGA

TTATAGGCGCATTTCTCTGAACATGCACGAGAATCGTGCTCCTGAGTCTCCATCATTC

AGTGGTGCGAGCTCGC

FIGURE 2E

Nucleotide sequence of the full-length CK-1 from *Physcomitrella patens* (SEQ ID NO:18)

ATCCCGGGCTCACGTAGTGCACTGAACTCTGTCTGAATTTTAGGGGATGAGAGGTAG

ATTTGAAGAATACTGGTGTCTAATTTTCTGTTAATTTTTCACCCTTGAGGTAGCTCAT

GGATTTGGGAGGTGATCGCATGAGAGCTCCTCAGAGGCAGTCTCGAGAATATCAAT

ATAGATCATTGGACGTCTTCACAGAGCAGCACGAGCAGTTGCAAAAGCAGCAGCAG

CAAGATGAGTATCAGAGAACAGAATTGAAGCTCGAGACACTGCCAAAAATGTTAAG

CAATGCGACCGTGTCATCTTCCCCTCGAAGCAGTCCGGATGGACGTAGACTACGTAC

AGTCGCGAATAAGTATGCTGTGGAAGGTATGGTTGGGAGTGGCGCATTCTGCAAGG

TGTATCAGGGCTCCGATTTGACGAACCACGAGGTTGTGGGCATCAAGCTGGAGGAT

ACGAGAACTGAGCACGCTCAGTTAATGCACGAGTCGCGCTTGTACAACATATTGCG

GGGTGGGAAGGGAGTGCCCAACATGAGATGGTTCGGAAAAGAGCAAGACTACAAT

GTGATGGTGCTAGACCTATTGGGGCCGAACCTGTTGCACCTCTTTAAGGTGTGTGGG

CTAAGGTTTTCGTTGAAGACCGTGATTATGCTCGGTTACCAAATGATTGACCGGGTG

GAATACGTGCATTCTCGAGGGCTCGTTCACCGTGACCTGAAGCCGGATAACTTCCTC

ATGGGCTGCGGTCGGCAAGGAAACCAAGTGTTCATTATAGATTTTGGCTTGGCAAAG

GAGTACATGGACCCGGCAACACGAAGGCATATCCCTTACCGAGATAGGAAGAGCTT

CACAGGGACGGCACGGTACGCTAGTAGGAATCAGCACAGAGGAATCGAGCACAGT

AGAAGAGATGACATAGAATCACTTGGTTACATTCTTATGTACTTTCTAAGAGGCAAT

TTGCCATGGCAAGGGAAGGGCGGGCAACGCCTCACTGACCAGAAGCAACACGAGTA

CATGCACAACAAAATCAAGATGAACACCACTGTGGAGGAGCTTTGTGATGGGTATC

CCAGTCAATTTGCCGACTTTTTGCACCACGCGCGAAGTCTAGGTTTCTACGAGCAGC

CTGACTACTGTTACCTCCGAAGCTTGTTCCGTGATCTTTTCATTCAGAAAAAATTCCA

FIGURE 2E Continued

GCTCGACCATGTGTACGACTGGACTGTGTATACTCAACTCCCCCAGAATGGCTCTCT

GCAATCAGTGCGCAGCCAGAATTCCGCTGCTTCGTCCCATTTGCAAAATCGACCTTC

GAATGTATCATATTGTCCACCCTTGACCAAGTCGGAGTTCCGTCGTGAGGTTGTTGC

GGCGAATTAGGGCTTACGTTGGGAGGACTAGTGGTTCATCCTCTGCTCTGGTACTAA

AATAGCACAAGGTTGCTTACTGTTTCCCTCTCTCAAGTCTTACATGATTGTGAATGGG

GGTTTATGGAGTTGAGGATGAGGCAACTAAGCAGAGTGTAGGAAAAGAGTTGTAGA

CTCTCTAGTGTGTAGTGTGTAAATCAAGGCTTCTAGCATTGTGTCGGTAGCTTGTATG

GATCAGACTAGAAATGACTTTATCCATTACAAGAATTTTTACTCGGAAAGCCCATGA

CGGTGATGATTTCAATACGTTGCACAAGCAACTTTCTTCTGTAATTGAAATAGAGGA

TCTGGTCTGAGTATGAGAAGATGGGCATGTTAACGC

FIGURE 2F

Nucleotide sequence of the full-length CK-2 from *Physcomitrella patens* (SEQ ID NO:19)

ATCCCGGGTTGTCGAGGACGGAGAGAGAAGAGAGAGAGAGAGAGAGAGAGGTG

TTGTTTAGGGGAGGCATGCGGGAGCAGGATTGGTGTTAAGTTCGTAAGGAGAAGGG

AGTACATGCAAGTGCGTGCTTGTCGGATATCGGACAGCTGGATTTGTAAATAAGCGG

AGAGGAGGGTCGGTAATCAGGGGCGTACATCGATGGAGCCGCGTGTGGGAAACAA

GTATCGGCTGGGACGGAAAATTGGGAGCGGTTCCTTTGGGGAGATCTATCTTGGGAC

CAATGTTCAGACCAATGAGGAGGTCGGAATAAAGCTGGAAAGCATCAAGACGAAGC

ATCCACAATTGCTGTACGAGTCCAAGCTCTACCGGATACTACAAGGAGGAACTGGG

ATTCCCAATATCAGATGGTTCGGGATAGAAGGAGACTACAATGTCTTGGTTCTGGAT

CTGTTGGGGCCAAGTCTCGAAGACCTTTTCAACTTCTGCAGCCGGAAGTTCTCTTTA

AAGACTGTTCTCATGCTTGCTGACCAGCTGATCAACAGAGTGGAGTATGTGCATGCG

AAAAGCTTTCTTCATAGAGACATCAAGCCTGATAATTTTCTAATGGGGCTTGGTAGG

CGAGCAAACCAGGTCTACATTATTGATTTTGGTCTTGCCAAGAAGTACCGCGACCCT

TCCACGCATCAGCATATTCCCTACAGGGAGAACAAAAATCTGACAGGGACTGCTCG

GTATGCAAGCATCAACACTCATCTTGGTATTGAGCAAAGCAGACGAGATGATTTGG

AATCTCTTGGATATGTGCTCATGTACTTCCTGAGAGGCAGTCTTCCATGGCAAGGAC

TGAAAGCGGGAACCAAGAAGCAGAAGTACGAGAAGATCAGTGAGAAAAAAATGTC

CACGCCCATTGAGGTCCTTTGTAAAAATTATCCTTCAGAATTCGCCTCGTACTTCCAC

TACTGCCGGTCCTTGCGTTTTGATGACAAACCCGACTATGCATATTTGAAAAGAATC

TTCCGTGACCTCTTTATTCGTGAGGGTTTTCAATTTGACTACGTTTTTGACTGGACAA

TTCTGAAGTACCAGCAGTCACAAATTTCCGGTGGCAGTTCAACTCGACTGGGTGCTT

CTGCAGGGCAAACCAGTGGTGCACTTGGAACTGGGGCTACAGGAAGCCGAGACCTG

FIGURE 2G

Nucleotide sequence of the full-length CK-3 from *Physcomitrella patens* (SEQ ID NO:20)

GCGTTAACGGGAGGAAGGTCGGGGGAAGAGACGCTTGAGGCTGCTGAAAGGGGAT

TCACTCAGCGTCCCCACCCATTCGTCAATCTGGCGCAGAAGATCGGAAAATCGGTCC

GACGGCCAGGTGTTATGTCCAAGGCCCGGGTTTACACAGATGTGAATGTCCAACGTC

CGAAAGATTATTGGGACTACGAGGCCCTCACCGTCCAATGGGGGGGACCAAGACGAT

TACGAGGTAGTGCGTAAGGTGGGGCGAGGGAAATACAGTGAGGTTTTTGAAGGTGT

CAACGCCGTGAATAGTGAGCGTTGCGTTATGAAGATTTTGAAGCCAGTAAAGAAAA

AAAAGATCAAAAGAGAGATCAAGATTCTGCAAAACCTTTGTGGAGGGCCCAACATT

GTGAAGCTTCTGGACATTGTCCGTGATCAGCAATCGAAGACACCCAGCCTAATTTTT

GAGTATGTGAACAATACTGATTTCAAAGTGCTCTACCCCACTCTTACAGACTTTGAT

ATCCGATACTACATTCATGAGCTGCTCAAGGCTTTGGACTATTGCCATTCTCAAGGG

ATTATGCACAGGGATGTGAAGCCACACAACGTGATGATTGACCATGAGCAGCGGAA

GCTTAGGCTTATTGACTGGGGACTTGCCGAATTCTATCATCCTGGCAAAGAGTATAA

TGTGCGTGTTGCCTCTAGGTACTTCAAGGGTCCTGAGCTGCTGGTTGATCTTCAAGAT

TATGATTACTCTCTCGACATGTGGAGCTTGGGGTGCATGTTTGCCGGCATGATATTTC

GGAAGGAGCCATTCTTTTATGGGCATGACAATTATGATCAACTTGTGAAGATTGCTA

AGGTGTTGGGAACTGATGAATTGAATTCCTATCTAAACAAATACCGCCTAGAGCTGG

ACCCCCATTTGGAAGCACTGGTTGGCAGGCATAGCAGGAAACCTTGGTCAAAGTTC

ATCAATGCTGATAATCAGCGTCTGGTTGTTCCAGAGGCTGTGGATTTTTTGGATAAG

CTTCTACGCTACGATCATCAAGACAGGCTGACTGCGAAGGAAGCTATGGCACATCC

CTATTTTTATCCCGTGAAGGTGTCGGAGGTTAGCAACCGTCGCAGTGCTTGATATGA

FIGURE 2F Continued

CAGCGGCCCACCGAACCAATGGATCCTTCTCGGCGCAGGCTTCCTGGAGGAGCAAA

TGGCTCCGGGGTCGCAAATGCTTTGGACTCATCTAAGCACAAAAGTCCTGGACTTGA

TGAATCTGCTAAGGATTCTGCTCTTGCTGTTGTGTCAGAACCAGAGCGCATGCATAC

ATCTTCGTATGCAACTCGGGGGGGTTCTTCCTCCAGGCGAGCTGTCCTATCTAGCAG

CAGGCCCTCAGGGGCATCAGCAGAAGTCGTAGATTCCTCTCGAACAGGGAGCAGTA

AGCTTGGTCCCACCAGCTTACGGTCGTCAGCAGGGATGCAGAGGAGCTCTCCAGTTA

CTTCGGACCCAAAGCGGATATCTAGCCGCCATCCACAACCGCCATCTGCCAACTTGA

GGATTTACGAAGCCGCTATCAAGGGAGTTGAATCACTTTCTGTTGAGGTGGATCAAA

GCCGTTATAAGTAGGCCCAGGCTTGTGGTTATATAGCCGGGCTCTGTCTTCTATCAA

ACCCTCTTGTTATGTAGATGAGAGTTGCTCTACATTTGGCAACAGCCTGATTGAGGG

GAAAACGGTGGTTCTGTCCTACAATGGTGCTAAGACTACAGGTCTCTCATACTTAGG

AATGAATGGATCTCTATCTTGTTACCATCAAACCATTGTCAGTGCTTTGTGTGGTAGC

TCTCTGCCATACGATTCCTAAGGTTAACGC

FIGURE 2G Continued

ATTGATATATCTCATATGGGCTTTCTTGTGATTACGTCCCACCCGGCTACCAGGTTTC

TCAGTTGTGCGAAGCGCTGAGCTCGC

FIGURE 2H

Nucleotide sequence of the full-length MPK-2 from *Physcomitrella patens* (SEQ ID NO:21)

ATCCCGGGCGAGCCATGGCGCCACTTGCTTCGGCGAATGGGACTGTTTGACTTCTTC

GCTTCGCCCCCGCCTCGCCCTTCACCCTCCTCTGTTCTTGTCACAGCCTCCTCCTCCG

TCTCTGTCTGTTGGCTGGGTAAGTTTTGGGAGTGAGGAGGACGTGGTCATGGAAGAA

GAGCCCCCCTCTTTTGTAGTGGACTGTCGGTAAATTGGACCTGGAGCCTGCCGGCTC

ATCGCGTTTGCTTAGATTGTGGGCGGGTGCTGTTGAAATTCCTTGAACTTGCTACTGG

TCGGAAACGCTCGAATTGCGACTTTGATTGAAGGTCTGGTTGTTGCTGCGGTCGGGA

TCTTACTCAGTCTCTTCAATAGGACCTCTGAAGCAGTATGGAGACTAGCAGTGGAAC

TCCAGAATTGAAAGTTATAAGTACTCCGACCTACGGAGGTCATTACGTGAAATATGT

TGTGGCGGGAACTGATTTCGAAGTCACCGCGAGGTACAAGCCACCACTTCGTCCGAT

TGGGCGCGGAGCTTATGGAATCGTCTGTTCACTCTTTGATACCGTTACGGGTGAGGA

GGTGGCGGTCAAAAAGATTGGAAACGCCTTCGACAACAGGATCGATGCGAAGCGAA

CACTGCGTGAAATAAAACTCCTCCGGCATATGGATCATGAAAACGTCGTTGCCATTA

CAGACATCATTCGTCCCCCAACTAGGGAGAATTTCAACGACGTGTACATTGTATACG

AGTTGATGGATACGGACCTACACCAGATCATTCGTTCAAATCAAGCTCTCACAGAAG

ACCACTGTCAGTATTTTCTGTATCAAATCTTGCGGGGCTTGAAGTACATCCATTCGGC

GAACGTCTTGCACCGGGACTTGAAGCCCACCAACCTTCTCGTCAATGCCAATTGCGA

TTTGAAAATCGCAGATTTTGGCTTGGCACGCACTCTCTCTGAAACGGATTTCATGAC

TGAGTATGTTGTAACGAGGTGGTACAGAGCTCCAGAGCTGCTCCTGAATTGTTCAGC

ATACACTGCAGCTATTGACATTTGGTCTGTGGGGTGCATCTTCATGGAGTTGCTTAA

CCGATCTGCGTTGTTCCCTGGGAGAGACTATGTGCATCAGCTCCGCCTAATTACAGA

ACTCATCGGAACTCCTGAAGATAGGGATCTTGGGTTTTTGAGAAGCGACAATGCTAG

FIGURE 2H Continued

GCGGTATATCAAGCACCTGCCTCGACAGTCGCCTATTCCCTTAACCCAGAAGTTCAG

AGGCATTAATCGTTCTGCTCTTGATCTTGTTGAAAAGATGCTGGTCTTTGATCCAGCG

AAAAGAATCACAGTGGAAGCTGCCTTGGCGCACCCTTATTTAGCTTCACTTCATGAC

ATCAACGATGAGCCTGCCTCGGTATCTCCCTTCGAGTTTGACTTCGAGGAGCCCCCT

ATCTCGGAGGAGCATATCAAGGATCTCATTTGGAGGGAGGCTCTGGATTGCAGCTTA

GGTCCTGATGATATGGTGCAGTAACTTCACACTTCATCTCAAGTTGTAAGGCCTACT

CTCAATTCTTTAGGTGGCTACAACGCTATCCCGGCGTTGTATGGTTTTGCAACTTATT

CCCCCCCGTGTGATTACACTATTGGATTATAGAATGACAATTCGTTAGTTCTTTTCCC

TGGCGCTATATCTTTGTCTGCACATTTCATCCAGCAGACATTGTTGCTCGGCGTTAAC

GC

FIGURE 2I

Nucleotide sequence of the full-length MPK-3 from *Physcomitrella patens* (SEQ ID NO:22)

ATCCCGGGCTTGTATTGGCTCGGATAATTTATGTTGACAATTGATTTGTGAGGCTTCG

TATTGAGTCAGCGAGCAGGCTGAGAGTTCGGCAGCGAAGTTACACTCGACCTGGCT

GAAATTTGGAATTGAAGCGCGTGAAGCTTCATCTGTGATTTTGGAGGTTGTTTGACT

GATGAGAAGAGGTCTCTGAGCTGAGAATGTTTGCAATTTAGGGGCACCACCGGTTTG

TTGGAGTCCCTTGCCACTTATTACAATTGTTGGTTTACAAGCTCGACGAGTTTCAATC

GAACGTAGAGTTTTAGTCGGGTCGAGGATCTATGTATCCGCTCAGCGGAGAAGAGA

GCCTGATGTTGCCGAAGCGATCGTGTGGGATTTGACTAGAAAGAGGTGGACCGCAT

CAGAACTATTTATTCCTTGTGAGGGAAGGATCGAGGTTCCAATGGGTCTCACTCCGT

TTTCTTGTGTCACGGTTCAAGGTTATGTCCGGGTGGTCTACCCCGACGGCCACGTCG

AGAATCTGAGCAAATCTTGTAGCGTGCACGATCTTCTTCTGGGTAATCCAGACTACT

ATGTCTGCGGTAGCACCCCTTACACAATCACCAATCGTATGGCAGCGGAAGAGGTG

CTCGAGTATGGGGTGACCTACTTCGTTTGCGCAACGCCAAATGCCCAACCTTTCTTA

GAACGTCAGCCGAAGGTAGTACATCGAGGATCCAAGATTTTGCCACGATTTTCCAAA

CATGGGGTCCATGTGCGGGAGTTGCGAAGCCCGACGCATGGGAGCCAACAGTCACG

GAAGGTTTTTGATTATCATTCAGTAACGATGCAGCAGCTTGAATCCATACGAAACGA

GGGCCCAGAGCCTCACCTCGCTGGAGACCGACCATCGAAGCACCTTAAGCTCGTTTT

CATTCGGCATTGCTTGCGAGCACTTCGACTTCCTAGAATTTCAATAGACCTAATGGA

ATCGCCACTCCCTAATCTTTCCGGAGAGGCCTTATCGCCGACGGCAACTGCCAAAGA

CGAGATTACTCAGATGATACTAAAAAGTGCCGCAAGGTCCGAATTAGGAATGTATG

TTTCGAAGAGACAGGAATTCTATCTTCGAAGAGCGCGTAGGCGGCGTAAGTTTGCGT

GGAAGCCGGTTTTGCAGAGCATCTCCGAGATGAAGCCTGTCATGGAATTCCACACTC

FIGURE 2I Continued

CGATGGCTTACCGGGATAGTGGGTCTCCGCCGAAGAACGCCTCTACCCCATCCTTAC

CTGGCCCGAAGAACATTTCACCGCCACGACAAGTGAGTGTCCCGCAAAGGAGCAGT

CCTCCGCCGAAGAACGTCTCACCACCTCCCCAGCCCGCATTTGTAGCGCGGACTGCG

TCGAAGTATTCTGCTGCATCTCAGCAAGTTCAACGAAATCGAGGCAACGCGAAATCT

CTTTATATGGCGTAGTTTGTGTCTCGACTGAACTCCTATCTATTCCCCCATCGAGATA

ACTGCATTCGTTGGATAAATTTCTCCAACATTTTTGCTCTTCATCCTCAAGCAGCTCC

TCAATGGCCAGTAATATGTTACGACATTGTGCACAACTCCAATTACGTAGCGTTATT

CTGTAACCCACGTTCATCGAGGTATCAAGGAATGGCGCAGTAAGCACTGCTACTTTG

TGCTTTGGTATCCCGTTGTGACGAGATGTCATGTCGCACCGTGCCTATCAGTGGGAT

TTTCTTGAGCGCAGATCTTGCTTCCGCAGTTTGTTTCATAACGTTTTGGTTCGTAGGG

GGCCTAGACGGTACTATCAAGCAATGAGAAGTGTGCTGGTGTGGATTTGACAGCAA

TCTTTTGGAGGATTGTCTTTCCTATGTAGAACATAGCGAGGACACTTGCGCCTGGTG

GGCACATCCCATAGAACATAGTGCTTCACTTCTGGGTTGTTCACCACTAGGATCATA

TGACCTTCTCATCTATTTTCGGGCTTTGTTTCGAGCTCATGTACCATCGACTAGCGTC

ACTTTGACTGCGGTGATAATCGTTTGTCAATTTAGTGGAGCTTTGTAGATGATAGAT

GCCATTTGTACAGTAGCTTGGATGCTGTTTACAAGATAGCGGCAGCTAGAAGCCTTA

AACCTTTAGCTACCATGTATTATTTAAACCTATATGAAGTGAACGGCTGTGCAGAT

ATTGCCGTTAACGC

FIGURE 2J

Nucleotide sequence of the full-length MPK-4 from *Physcomitrella patens* (SEQ ID NO:23)

ATCCCGGGCGGTCGAGTCGTATTAGGTGTTGTTTCATTGTAAGGGTTCGGAAGCACG

GGGCACGGCGTATATACCGTTCCCCTTGAACGTTGATCTCACCTTTGGAAGACCTGA

ATTGAGTAGCGTGCGGAAGCTGCATCGATCCGGAAGAGACGATGAGTAGGAGAGTG

AGAAGGGGAGGTCTTCGCGTCGCGGTGCCGAAGCAAGAGACTCCCGTCAGCAAATT

TTTGACTGCCAGTGGAACTTTCCAGGATGATGATATCAAGCTCAACCACACCGGGCT

TCGCGTCGTCTCTTCAGAACCTAACCTTCCTACGCAGACGCAGTCTAGCTCCCCAGA

TGGGCAACTGTCAATAGCAGACCTGGAGTTAGTGCGGTTCTTGGGAAAGGGTGCGG

GTGGAACCGTGCAGCTTGTCCGGCACAAATGGACCAATGTCAATTATGCACTGAAG

GCGATACAAATGAATATCAACGAAACAGTGAGGAAGCAGATTGTTCAGGAGCTGAA

AATCAACCAAGTGACGCACCAGCAGTGCCCTTATATCGTGGAATGCTTCCACTCCTT

CTACCACAACGGCGTCATATCCATGATCCTAGAGTACATGGACAGGGGCTCGTTGTC

CGACATTATTAAGCAACAAAAGCAGATACCTGAGCCGTATTTGGCCGTCATTGCTAG

TCAAGTTCTGAAGGGATTGGAATACCTACACCAAGTCAGGCACATCATACATCGTGA

TATAAAGCCCTCCAACCTCCTCATCAATCACAAGGGTGAGGTCAAAATATCTGATTT

TGGTGTCAGTGCTGTGTTGGTTCATTCCTTGGCCCAGCGAGACACGTTCGTTGGGAC

TTGCACATATATGTCGCCAGAACGCCTTCAGGGGCGTTCGTATGCATACGACAGTGA

CCTATGGAGTTTAGGATTGACTCTTTTGGAGTGTGCGTTGGGTACCTTCCCATACAA

ACCAGCTGGAATGGAAGAGGGTTGGCAAAATTTCTTCATCCTCATGGAATGTATAGT

TAATCAACCCCCCGCAGCCGCATCCCCTGACAAATTCTCCCCCGAATTTTGTTCTTTT

ATTGAATCCTGCATCCGGAAATGTCCCAGTGAACGACCATCAACTACTGATTTACTT

AAACATCCGTTCCTGCAAAAGTACAACGAGGAAGAGTACCATTTGAGCAAGATTTT

FIGURE 2J Continued

GTAACTTAAAGTTAGCCTCGCATGGCGTGCAGAGACTGTCACTACCACAAGCCTGAT

CCACCACTGAACTTCAAGGGACTTTACCAAAAGCATGGTCGAACTACCTCGCCAATC

CGCCACTTTCTCAATGCCTTTTCCTTATATAGTCATATGTGGTCAAGTTGAGAACGAT

ATCAAATCAGATTGACGGAAAAAACATCTTCAACGCCGTTTCCCAACCTTATAGAAA

GTGGAGTTTTCTCAATGAGCCCCATTTGTCGCTGAGAACGTGCAGCTCATGAAACAA

TCCATAAGTGTGTTAATCGGGGTCTTATATTATCATCACCATGCTAGCTTTTTATGTT

ACCTGCACTTTTTCTTTCCTTATTGCACAGCATCGAACACTTCTTCGATACCCAAAAC

AATATTTCCATCTTCTTTCTTCTTTTTTTCACGTCTTGCGACAAGGAATTTCCTCACGG

AGATTTTTCAACACTTTTCTCAAATGTTTTTAGAGTTTTTAAACTGACAATTGAAGAG

GTCGGACCTACCGGACTCGC

FIGURE 2K

Nucleotide sequence of the full-length MPK-5 from *Physcomitrella patens* (SEQ ID NO:24)

ATCCCGGGAGAGGCTGATCTGATGCTACAGTTTCGTGTGCAGCTAGTCTTTAGAGAT

TCGGGCAACGCACTTGTTGAAGATCGGAAACTTTCAAAATCGGTCGAGTCGTATTAG

GTGTTGTTTCATTGTAAGGGTTCGGAAGCACGGGGCACGGCGTATATACCGTTCCCC

TTGAACGTTGATCTCACCTTTGGAAGACCTGAATTGAGTAGCGTGCGGAAGCTGCAT

CGATCCGGAAGAGACGATGAGTAGGAGAGTGAGAAGGGGAGGTCTTCGCGTCGCG

GTGCCGAAGCAAGAGACTCCCGTCAGCAAATTTTTGACTGCCAGTGGAACTTTCCAG

GATGATGATATCAAGCTCAACCACACCGGGCTTCGCGTCGTCTCTTCAGAACCTAAC

CTTCCTACGCAGACGCAGTCTAGCTCCCCAGATGGGCAACTGTCAATAGCAGACCTG

GAGTTAGTGCGGTTCTTAGGAAAGGGTGCGGGTGGAACCGTGCAGCTTGTCCGGCA

CAAATGGACCAATGTCAATTATGCACTGAAGGCGATACAAATGAATATCAACGAAA

CAGTGAGGAAGCAGATTGTTCAGGAGCTGAAAATCAACCAAGTGACGCACCAGCAG

TGCCCTTATATCGTGGAATGCTTCCACTCCTTCTACCACAACGGCGTCATATCCATGA

TCCTAGAGTACATGGACAGGGGCTCGTTGTCCGACATTATTAAGCAACAAAAGCAG

ATACCTGAGCCGTATCTGGCCGTCATTGCTAGTCAAGTTCTGAAGGGATTGGAATAC

CTACACCAAGTCAGGCACATCATACATCGTGATATAAAGCCCTCCAACCTCCTCATC

AATCACAAGGGTGAGGTCAAAATATCTGATTTTGGTGTCAGTGCTGTGTTGGTTCAT

TCCTTGGCCCAGCGAGACACGTTCGTTGGGACTTGCACATATATGTCGCCAGAACGC

CTTCAGGGGCGTTCGTATGCATACGACAGTGACCTATGGAGTTTAGGATTGACTCTT

TTGGAGTGTGCGTTGGGTACCTTCCCATACAAACCAGCTGGAATGGAAGAGGGTTG

GCAAAATTTCTTCATCCTCATGGAATGTATAGTTAATCAACCCCCCGCAGCCGCATC

CCCTGACAAATTCTCCCCCGAATTTTGTTCTTTTATTGAATCCTGCATCCGGAAATGT

FIGURE 2K Continued

CCCAGTGAACGACCATCAACTACTGATTTACTTAAACATCCGTTCCTGCAAAAGTAC

AACGAGGAAGAGTACCATTTGAGCAAGATTTTGTAACTTAAAGTTAGCCTCGCATGG

CGTGCAGAGACTGTCACTACCACAAGCCTGATCCACCACTGAACTTCAAGGGACTTT

ACCAAAAGCATGGTCGAACTACCTCGCCAATCCGCCAGAGCTCA

FIGURE 2L

Nucleotide sequence of the full-length CPK-1 from *Physcomitrella patens* (SEQ ID NO:25)

ATCCCGGGTGTAGGCGGGCGAGGTTCGATGCAATGGGGCAGTGTTATGGAAAGTTT

GATGATGGAGGCGAAGGGGAGGATTTGTTTGAGCGGCAGAAAGTGCAGGTTTCTAG

GACGCCAAAGCATGGATCGTGGAGCAATAGCAACCGAGGGAGCTTCAACAATGGCG

GGGGGGCCTCGCCTATGAGAGCCAAGACGTCGTTCGGGAGCAGCCATCCGTCCCCG

CGGCATCCCTCAGCTAGTCCGCTCCCTCACTACACGAGCTCCCCAGCGCCTTCGACC

CCGCGACGGAACATTTTCAAAAGGCCTTTTCCTCCTCCTTCTCCCGCGAAGCACATT

CAGTCCAGTCTCGTGAAACGGCATGGCGCGAAGCCGAAAGAAGGAGGGGCGATCCC

TGAGGCTGTCGATGGTGAGAAGCCCTTGGATAAGCATTTCGGCTATCACAAGAACTT

CGCTACTAAGTATGAGCTGGGGCATGAAGTCGGTCGCGGGCACTTCGGTCACACAT

GTTACGCGAAAGTACGGAAGGGCGAGCATAAGGGACAAGCCGTGGCAGTGAAGAT

AATCTCGAAAGCGAAGATGACGACTGCTATTGCGATCGAGGACGTGGGACGAGAAG

TGAAAATTTTGAAGGCTCTGACGGGACACCAGAATTTGGTTCGATTCTACGATTCCT

GCGAGGACCATCTAAATGTGTACATTGTTATGGAATTATGTGAAGGAGGTGAATTAT

TGGATCGAATTTTGTCTCGGGGAGGGAAGTACTCGGAGGAAGACGCCAAGGTTGTT

GTGCGGCAGATTTTGAGCGTTGTTGCGTTTTGTCACCTGCAAGGCGTTGTTCACCGA

GATCTTAAGCCTGAGAATTTTCTGTTTACCACGAAGGATGAATATGCTCAGCTTAAG

GCCATTGATTTTGGATTGTCAGATTTCATCAAACCCGATGAAAGACTGAACGATATC

GTTGGAAGCGCATACTACGTTGCGCCGGAGGTATTGCATAGGTTATATTCAATGGAA

GCTGACGTATGGAGCATTGGAGTCATCACGTACATTTTGTTATGTGGTAGTCGACCG

TTTTGGGCGCGGACCGAGTCGGGCATTTTTCGTGCGGTGTTGAGGGCTGACCCGAGC

TTTGAAGAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTCGTGAAGCGT

FIGURE 2L Continued

CTCCTGAATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCA

TGGATTCGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTG

AGGAATTATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAG

ACTTTAACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCA

AGTAACAACGGTCGTGTTACTTTTGAGAATTTCAGACAGGCACTGCTGAAAAATTCA

ACAGAGGCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTT

CATTTCAAGAAAATGGACTTTTCAGAGTTCTGTGCAGCGGCCATTAGTGTTCTCCAG

TTAGAAGCCACAGAACGATGGGAGCAGCATGCTCGCGCAGCTTACGACATATTTGA

GAAAGAGGGTAACCGAGTCATTTATCCTGATGAACTTGCGAAAGAGATGGGACTAG

CACCAAATGTACCAGCCCAAGTGTTTCTAGATTGGATTAGACAGTCTGATGGTCGGC

TGAGTTTCACTGGGTTCACCAAGCTGCTACATGGAATTTCCAGCCGTGCTATCAAAA

ATCTCCAGCAGTGATTCTTTGCATCGTACAGTTCGGAATGGAGTTTTTAAGCTCTTTT

AGTTTCACTTCCGTCTTCAACTGCTGCTTCGCCTCGTCTCTGAGCTGTGATAGCGTAT

CTCAAGCATATGCACAACTCGCATTTTTGCTGAAGTGATTTGTCACCTCACATTAGTC

GGGCCTCTGGAACTTTCACTTATTTGGATTATTTATGTAGAAGTCCAGATCAAAAAG

CGAAAAGGAATGGCTAGATATTGTCACAAGAAGTAACATAGTCAAATTCAGGAGCA

CTTAAGCACACATTGAGTGCTTTTTATTGGAATTCTTAGATATGGAACTGATGTTTCC

AAGGGAAGGGTCTATGAGGCAGAGAGTGGAATGTATAGACTGGCATATGGTTAAGT

GATCATTGGACTGCCGTTCTACTCCGGTTGTCGTTAACGC

FIGURE 2M

Nucleotide sequence of the full-length CPK-2 from *Physcomitrella patens* (SEQ ID NO:26)

ATCCCGGGCGAACTGCGATCTGAGATTCCAACTTGGAAGGGCCTCGCGTAAGACCG

GATCTCGTTTCTTACGCTTTTGCGCCTCGCGATATTTGTACATTGTTTCCTCTGGTTTT

ATTCGATTCCGCCTCTGAAAATGTGAACGGGCTGCAAGCTTGGTTTTGGAGCAACGT

TGGAGCATTGAAGGGTTGCGCTCGTCCCTGCCCATTCCTCGCTTCTGCTCTGGCCTAT

GTCATGACGACGTGAAGGAGAGGATTTGAGGGTTTTGTAAGTGATATAATCCTCCCC

GAGGAGATTTCTGTGAGTTGATTAACTTGGATCAGCGACATGGGGAACACTAGTTCG

AGGGGATCGAGGAAGTCCACTCGGCAGGTGAATCAGGGAGTCGGGTCTCAAGACAC

CCGAGAGAAGAATGATAGCGTCAATCCAAAGACGAGACAGGGTGGTAGCGTTGGCG

CAAACAACTATGGCGGAAAGCCAAGCAGTGGTGCTCAGGCCGGAGAACGATCCACC

TCTGCGCCCGCTGCTCTGCCGAGGCCGAAGCCAGCATCGAGGTCAGTATCCGGTGTT

TTGGGTAAGCCGCTGTCAGATATTCGTCAATCTTACATCCTGGGACGGGAGCTTGGC

CGAGGGCAGTTCGGAGTGACTTACTTGTGTACTGACAAGATGACGAATGAGGCGTA

CGCGTGCAAGAGCATCGCCAAACGGAAACTGACCAGTAAGGAGGATATCGAGGATG

TTAAGCGGGAGGTTCAGATTATGCATCACCTGTCGGGGACACCCAATATCGTGGTGT

TAAAGGATGTGTTCGAGGACAAGCATTCCGTGCATCTTGTGATGGAGCTCTGTGCAG

GTGGCGAGCTCTTCGATCGCATCATTGCCAAGGGGCATTACAGTGAGCGCGCCGCTG

CCGATATGTGCAGAGTCATCGTCAATGTGGTGCACAGATGCCACTCATTAGGGGTCT

TCCATCGGGATCTCAAGCCAGAGAATTTTCTGTTGGCCAGCAAGGCTGAGGATGCGC

CTCTGAAGGCCACAGACTTCGGTCTGTCAACTTTCTTTAAGCCAGGAGATGTGTTCC

AGGATATTGTTGGAAGTGCGTATTACGTGGCCCCTGAAGTTTTGAAGAGAAGTTATG

GTCCTGAAGCTGATGTTTGGAGTGCAGGCGTGATTGTGTACATTCTGCTGTGTGGTG

FIGURE 2M Continued

TACCCCCCTTCTGGGCTGAAACTGAGCAGGGTATCTTTGACGCTGTGCTCAAAGGGC

ACATAGACTTCGAGAACGATCCATGGCCGAAAATCTCCAACGGGGCTAAGGATTTG

GTGAGGAAAATGCTAAACCCTAACGTGAAGATACGTCTGACGGCACAGCAGGTGTT

GAACCATCCATGGATGAAGGAAGATGGTGATGCTCCAGACGTGCCACTCGACAATG

CGGTGTTGACCAGACTGAAAAATTTCTCAGCCGCCAACAAGATGAAAAAGCTGGCG

CTGAAGGTGATTGCAGAGAGTCTGTCGGAGGAAGAGATCGTGGGGTTGAGGGAGAT

GTTCAAATCCATAGATACAGACAACAGCGGCACGGTGACGTTCGAGGAGCTTAAGG

AAGGGTTGCTGAAGCAGGGCTCAAAACTTAATGAATCGGACATCAGGAAACTAATG

GAAGCTGCAGATGTCGATGGAAACGGCAAGATCGACTTCAACGAGTTCATATCGGC

AACAATGCACATGAACAAGACGGAGAAAGAGGATCACCTTTGGGCAGCATTCATGC

ATTTCGACACGGACAATAGCGGGTATATCACCATCGACGAGCTTCAGGAAGCAATG

GAGAAGAATGGAATGGGAGATCCTGAGACCATCCAAGAGATCATCAGCGAGGTGG

ACACAGACAACGACGGAAGAATAGACTACGACGAGTTCGTAGCCATGATGCGCAAG

GGCAATCCTGGCGCTGAAAACGGAGGAACGGTGAACAAGCCCAGACACAGGTAGT

AGCTCCTGGTTGCCAATTTGACGACGGGTTTGGCAAGGCAACAGTAGTTGTTGTTAG

CTTTCAGATTCAGGTTCGGTATTGTTCATGCCCTCCTTTGTCTCGAACAATGGACTCT

AGGCCTTTCCAATGGAAAAGCTATTCCAACAGGGTTTGCATAACGTGTAGTAGAATG

AAAGCATTGCCTGGGGGGTGTACAGTGCCTGTGATCTTGTGGAGTTCTCGTAGGATG

GCTTCGGTTGGATCTCGTTAACGC

FIGURE 3A

Deduced amino acid sequence of PK-6 from *Physcomitrella patens* (SEQ ID NO:27)

MGVDMKAPAKQSLGVGLLLCSVVILSVVSSVYGQVQTDPVDTTGLISMWYDLKQSQSL
TGWTQNASNPCGQQWYGVVCDGSSVTEIKIGSRGLNGNFNPSYFQNAFKKLRIFDASN
NNIEGNIPQQFPTSLTQMILNNNKLTGGLPQFDQLGALTVVNLSNNNLTGNMNPNYFNV
IVNVETFDVSYNQLEGTLPDSILNLAKLRFLNLQNNKFNGKLPDDFSRLKNLQTFNIEND
QFTGNYPSGLPSNSRVGGNRLTFPPPPAPGTPAPRTPSPSGTSNGSSSHLPLGAIIGIAAGG
AVLLLLLALGICLCCRKRSKKALGDPEATTSSRRPWFTPPLSAKSQSDPSKSIDKTTKRNI
FGSSKSEKKSSKHRVFEPAPLDKGAADEPVVKASPPVKVLKAPPSFKGISGLGAGHSKAT
IGKVNKSNIAATPFSVADLQAATNSFSQDNLIGEGSMGRVYRAEFPNGQVLAVKKIDSS
ASMVQNEDDFLSVVDSLARLQHANTAELVGYCIEHDQRLLVYEYVSRGTLNELLHFSG
ENTKALSWNVRIKIALGSARALEYLHEVCAPPVVHHNFKSANILLDDELNPHVSDCGLA
ALAPSGSERQVSAQMLGSFGYSAPEYAMSGTYTVKSDVYSFGVVMLELLTGRKSLDSS
RPRSEQSLVRWATPQLHDIDALARMVDPSLKGIYPAKSLSRFADIVALCVQPEPEFRPPM
SEVVQALVRLMQRASLSKRRSESAVGIESNEPSETSL*

FIGURE 3B

Deduced amino acid sequence of PK-7 from *Physcomitrella patens* (SEQ ID NO:28)

MSVSGMDNYEKLEKVGEGTYGKVYKARDKRSGQLVALKKTRLEMEEEGVPSTALREV

SLLQMLSHSMYIVRLLCVEHVEKGSKPMLYLVFEYMDTDLKKYIDLHGRGPSGKPLPPK

VVQSFMYQLCTGLAHCHGHGVMHRDLKPQNLLVDKQTRRLKIADLGLGRAFTVPMKS

YTHEIVTLWYRAPEVLLGATHYSLPVDIWSVGCIFAELVRKMPLFTGDSELQQLLHIFRL

LGTPNETIWPGVSQHRDWHEFPQWRPQDLSLAVPGLSAVGLDLLAKMLVFEPSKRISAK

AALSHTYFADVDKTAT

FIGURE 3C

Deduced amino acid sequence of PK-8 from *Physcomitrella patens* (SEQ ID NO:29)

MADAKEELALRTEMHWAVRSNDVGLLRTILKKDKQLVNAADYDKRTPLHIAASLDCV

PVAKVLLAEGAELNAKDRWGKSPRGEAESAGYMEMVKLLKDYGAESHAGAPRGHVE

SLIQVAPPLPSNRDWEIAPSEIELDTSELIGKGAFGEIRKALWRGTPVAVKTIRPSLSNDR

MVIKDFQHEVQLLVKVRHPNIVQFLGAVTRQRPLMLVTEFLAGGDLHQLLRSNPNLAP

DRIVKYALDIARGMSYLHNRSKPIIHRDLKPRNIIVDEEHELKVGDFGLSKLIDVKLMHD

VYKMTGGTGSYRYMAPEVFEHQPYDKSVDVFSFGMILYEMFEGVAPFEDKDAYDAAT

LVARDDKRPEMRAQTYPPQMKALIEDCWSPYTPKRPPFVEIVKKLEVMYEDCLLRLPK

DRRHLRDILHLRRNPADS*

FIGURE 3D

Deduced amino acid sequence of PK-9 from *Physcomitrella patens* (SEQ ID NO:30)

MKRYQRRKVQRLGREGQVLLERTLFKQLRPSPFVPHLLATPIDSDNVALVLNCVLAGPL
ELLLRSPLDENSARFLVANVVLAVELLHKDGVVYRGISPDVLMIDRKGRLQLVDFRFAK
QMSDERTFTVCGMADFLAPEIIQGQGHGLASDWWAVGVLMYFMLQTELPFGSWRDNEL
EIFGRIARRQLTFPSSFSPEAVDLIDKLLVVDPTKRLGCDSHGSLAIREHPWFRGINWDKH
LDCSVEVPSEIMTRLQLAIDFLPVDDSYQVFDLQPDEDDPPWLDGW*

FIGURE 3E

Deduced amino acid sequence of CK-1 from *Physcomitrella patens* (SEQ ID NO:31)

MDLGGDRMRAPQRQSREYQYRSLDVFTEQHEQLQKQQQQDEYQRTELKLETLPKMLS

NATVSSSPRSSPDGRRLRTVANKYAVEGMVGSGAFCKVYQGSDLTNHEVVGIKLEDTR

TEHAQLMHESRLYNILRGGKGVPNMRWFGKEQDYNVMVLDLLGPNLLHLFKVCGLRF

SLKTVIMLGYQMIDRVEYVHSRGLVHRDLKPDNFLMGCGRQGNQVFIIDFGLAKEYMD

PATRRHIPYRDRKSFTGTARYASRNQHRGIEHSRRDDIESLGYILMYFLRGNLPWQGKG

GQRLTDQKQHEYMHNKIKMNTTVEELCDGYPSQFADFLHHARSLGFYEQPDYCYLRSL

FRDLFIQKKFQLDHVYDWTVYTQLPQNGSLQSVRSQNSAASSHLQNRPSNVSYCPPLTK

SEFRREVVAAN*

FIGURE 3F

Deduced amino acid sequence of CK-2 from *Physcomitrella patens* (SEQ ID NO:32)

MEPRVGNKYRLGRKIGSGSFGEIYLGTNVQTNEEVGIKLESIKTKHPQLLYESKLYRILQ

GGTGIPNIRWFGIEGDYNVLVLDLLGPSLEDLFNFCSRKFSLKTVLMLADQLINRVEYVH

AKSFLHRDIKPDNFLMGLGRRANQVYIIDFGLAKKYRDPSTHQHIPYRENKNLTGTARY

ASINTHLGIEQSRRDDLESLGYVLMYFLRGSLPWQGLKAGTKKQKYEKISEKKMSTPIEV

LCKNYPSEFASYFHYCRSLRFDDKPDYAYLKRIFRDLFIREGFQFDYVFDWTILKYQQSQ

ISGGSSTRLGASAGQTSGALGTGATGSRDLQRPTEPMDPSRRRLPGGANGSGVANALDS

SKHKSPGLDESAKDSALAVVSEPERMHTSSYATRGGSSSRRAVLSSSRPSGASAEVVDSS

RTGSSKLGPTSLRSSAGMQRSSPVTSDPKRISSRHPQPPSANLRIYEAAIKGVESLSVEVD

QSRYK*

FIGURE 3G

Deduced amino acid sequence of CK-3 from *Physcomitrella patens* (SEQ ID NO:33)

MSKARVYTDVNVQRPKDYWDYEALTVQWGDQDDYEVVRKVGRGKYSEVFEGVNAV

NSERCVMKILKPVKKKKIKREIKILQNLCGGPNIVKLLDIVRDQQSKTPSLIFEYVNNTDF

KVLYPTLTDFDIRYYIHELLKALDYCHSQGIMHRDVKPHNVMIDHEQRKLRLIDWGLAE

FYHPGKEYNVRVASRYFKGPELLVDLQDYDYSLDMWSLGCMFAGMIFRKEPFFYGHD

NYDQLVKIAKVLGTDELNSYLNKYRLELDPHLEALVGRHSRKPWSKFINADNQRLVVP

EAVDFLDKLLRYDHQDRLTAKEAMAHPYFYPVKVSEVSNRRSA*

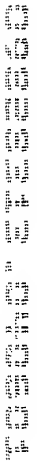


FIGURE 3H

Deduced amino acid sequence of MPK-2 from *Physcomitrella patens* (SEQ ID NO:34)

METSSGTPELKVISTPTYGGHYVKYVVAGTDFEVTARYKPPLRPIGRGAYGIVCSLFDTV

TGEEVAVKKIGNAFDNRIDAKRTLREIKLLRHMDHENVVAITDIIRPPTRENFNDVYIVY

ELMDTDLHQIIRSNQALTEDHCQYFLYQILRGLKYIHSANVLHRDLKPTNLLVNANCDL

KIADFGLARTLSETDFMTEYVVTRWYRAPELLLNCSAYTAAIDIWSVGCIFMELLNRSAL

FPGRDYVHQLRLITELIGTPEDRDLGFLRSDNARRYIKHLPRQSPIPLTQKFRGINRSALDL

VEKMLVFDPAKRITVEAALAHPYLASLHDINDEPASVSPFEFDFEEPPISEEHIKDLIWRE

ALDCSLGPDDMVQ*

FIGURE 3I

Deduced amino acid sequence of MPK-3 from *Physcomitrella patens* (SEQ ID NO:35)

MGLTPFSCVTVQGYVRVVYPDGHVENLSKSCSVHDLLLGNPDYYVCGSTPYTITNRMA

AEEVLEYGVTYFVCATPNAQPFLERQPKVVHRGSKILPRFSKHGVHVRELRSPTHGSQQ

SRKVFDYHSVTMQQLESIRNEGPEPHLAGDRPSKHLKLVFIRHCLRALRLPRISIDLMESP

LPNLSGEALSPTATAKDEITQMILKSAARSELGMYVSKRQEFYLRRARRRRKFAWKPVL

QSISEMKPVMEFHTPMAYRDSGSPPKNASTPSLPGPKNISPPRQVSVPQRSSPPPKNVSPP

PQPAFVARTASKYSAASQQVQRNRGNAKSLYMA*

FIGURE 3J

Deduced amino acid sequence of MPK-4 from *Physcomitrella patens* (SEQ ID NO:36)

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSS

SPDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQEL

KINQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIIKQQKQIPEPYLAVIASQVL

KGLEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSP

ERLQGRSYAYDSDLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAAS

PDKFSPEFCSFIESCIRKCPSERPSTTDLLKHPFLQKYNEEEYHLSKIL*

FIGURE 3K

Deduced amino acid sequence of MPK-5 from *Physcomitrella patens* (SEQ ID NO:37)

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSSS
PDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQELKI
NQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIIKQQKQIPEPYLAVIASQVLKG
LEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSPERL
QGRSYAYDSDLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAASPDK
FSPEFCSFIESCIRKCPSERPSTTDLLKHPFLQKYNEEEYHLSKIL*

FIGURE 3L

Deduced amino acid sequence of CPK-1 from *Physcomitrella patens* (SEQ ID NO:38)

MGQCYGKFDDGGEGEDLFERQKVQVSRTPKHGSWSNSNRGSFNNGGGASPMRAKTSFG
SSHPSPRHPSASPLPHYTSSPAPSTPRRNIFKRPFPPPSPAKHIQSSLVKRHGAKPKEGGAIP
EAVDGEKPLDKHFGYHKNFATKYELGHEVGRGHFGHTCYAKVRKGEHKGQAVAVKIIS
KAKMTTAIAIEDVGREVKILKALTGHQNLVRFYDSCEDHLNVYIVMELCEGGELLDRILS
RGGKYSEEDAKVVVRQILSVVAFCHLQGVVHRDLKPENFLFTTKDEYAQLKAIDFGLSD
FIKPDERLNDIVGSAYYVAPEVLHRLYSMEADVWSIGVITYILLCGSRPFWARTESGIFRA
VLRADPSFEEAPWPSISPEAKDFVKRLLNKDMRKRMTAAQALTHPWIRSNNVKIPLDILV
YRLVRNYLRASSMRKAALKALSKTLTEDETFYLRTQFMLLEPSNNGRVTFENFRQALLK
NSTEAMKESRVFEILESMDGLHFKKMDFSEFCAAAISVLQLEATERWEQHARAAYDIFEK
EGNRVIYPDELAKEMGLAPNVPAQVFLDWIRQSDGRLSFTGFTKLLHGISSRAIKNLQQ*

FIGURE 3M

Deduced amino acid sequence of CPK-2 from *Physcomitrella patens* (SEQ ID NO:39)

MGNTSSRGSRKSTRQVNQGVGSQDTREKNDSVNPKTRQGGSVGANNYGGKPSSGAQA
GERSTSAPAALPRPKPASRSVSGVLGKPLSDIRQSYILGRELGRGQFGVTYLCTDKMTNE
AYACKSIAKRKLTSKEDIEDVKREVQIMHHLSGTPNIVVLKDVFEDKHSVHLVMELCAG
GELFDRIIAKGHYSERAAADMCRVIVNVVHRCHSLGVFHRDLKPENFLLASKAEDAPLK
ATDFGLSTFFKPGDVFQDIVGSAYYVAPEVLKRSYGPEADVWSAGVIVYILLCGVPPFWA
ETEQGIFDAVLKGHIDFENDPWPKISNGAKDLVRKMLNPNVKIRLTAQQVLNHPWMKED
GDAPDVPLDNAVLTRLKNFSAANKMKKLALKVIAESLSEEEIVGLREMFKSIDTDNSGTV
TFEELKEGLLKQGSKLNESDIRKLMEAADVDGNGKIDFNEFISATMHMNKTEKEDHLWA
AFMHFDTDNSGYITIDELQEAMEKNGMGDPETIQEIISEVDTDNDGRIDYDEFVAMMRK
GNPGAENGGTVNKPRHR

FIGURE 4

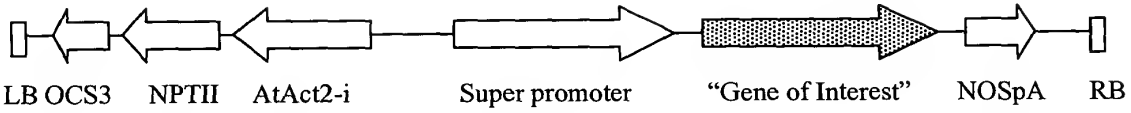
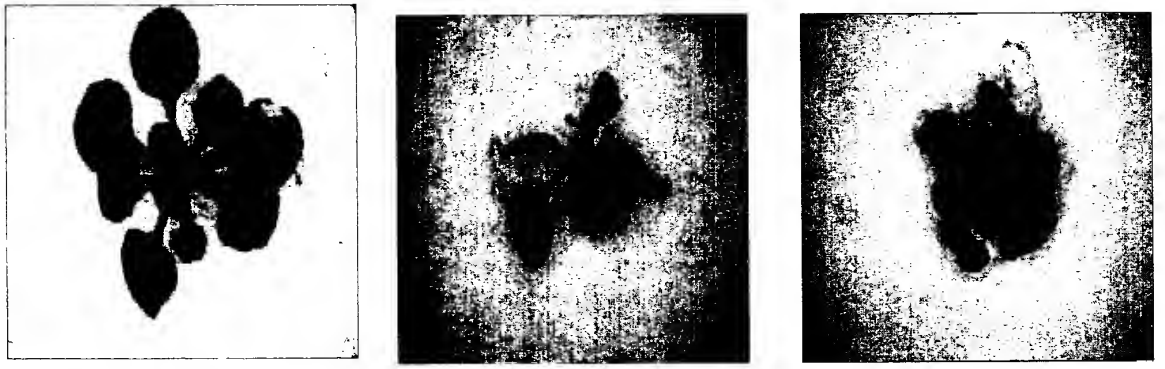

LB OCS3
NPTII
AtAct2-i
Super promoter
"Gene of Interest"
NOSpA
RB

Figure 5



PpPK-6
Drought

Control
Drought

Figure 6

PpPK-7

Drought

Control

Drought

Figure 7

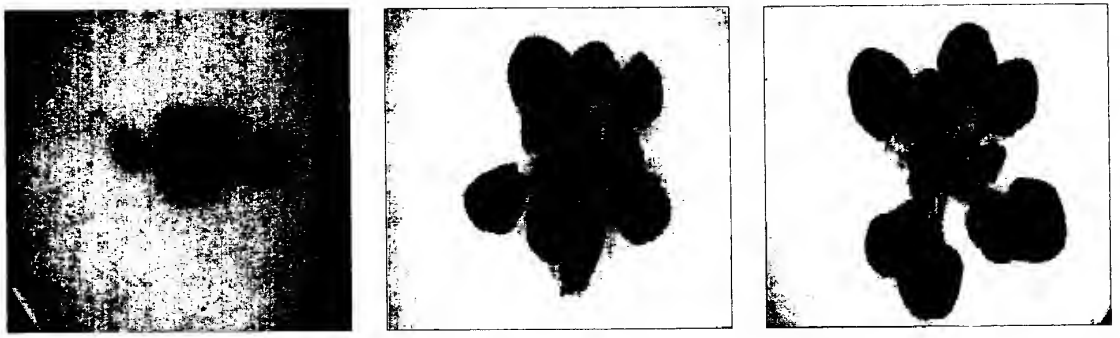
PpPK-7 ●

Freezing

Control

Freezing

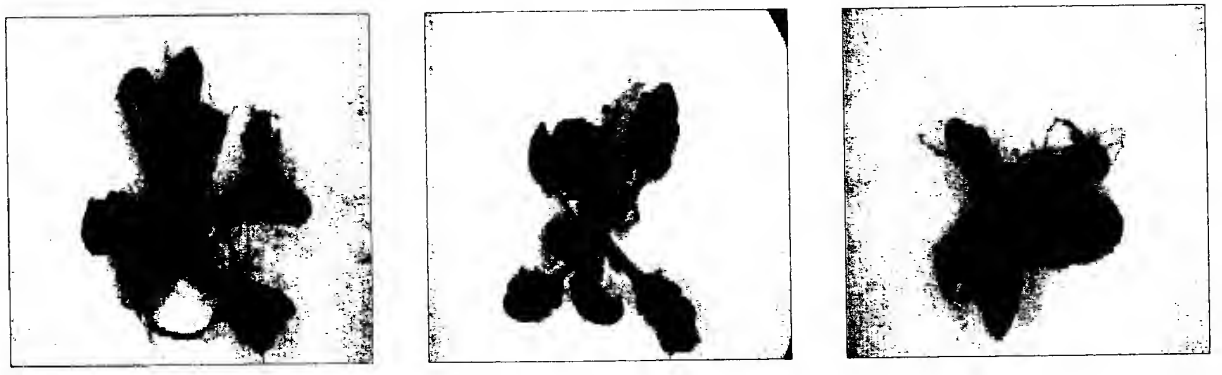
Figure 8



PpMPK-3
Drought

Control
Drought

Figure 9



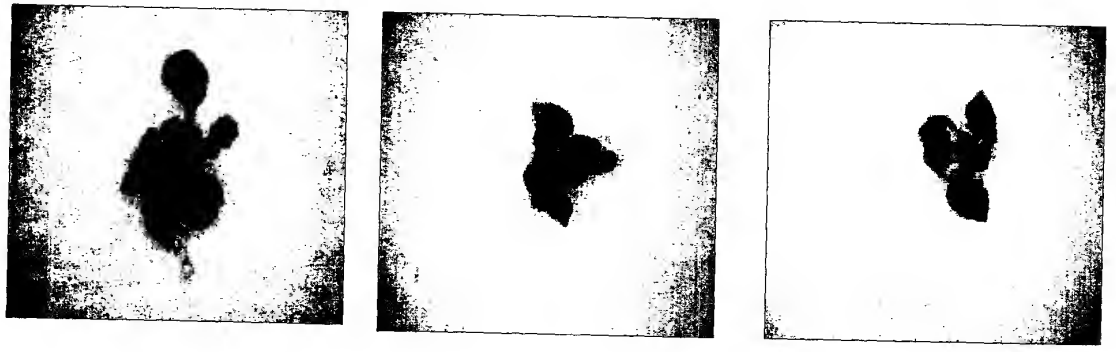
PpPK-9

Freezing

Control

Freezing

Figure 10



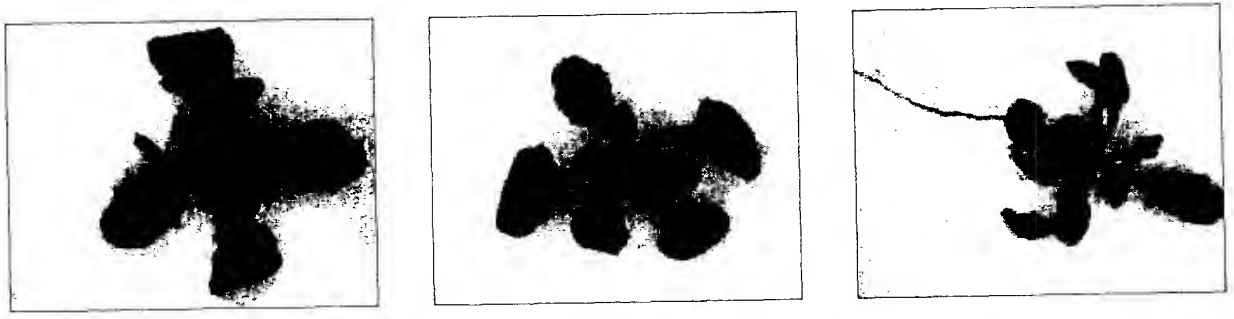
PpCK-1

Drought

Control

Drought

Figure 11



PpCK-1

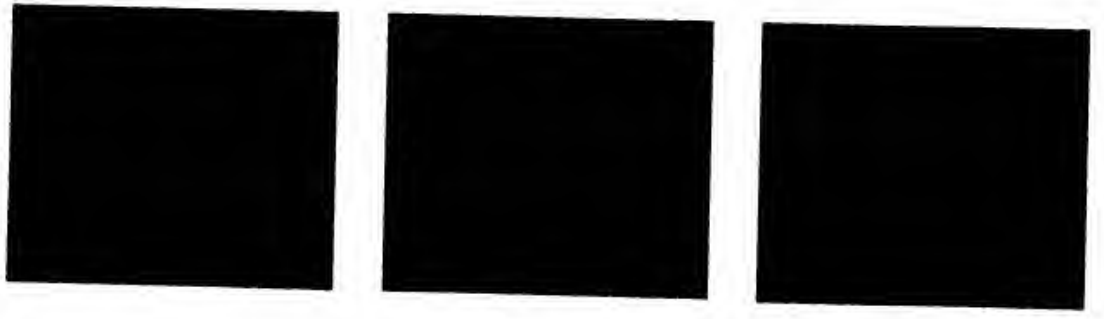
Freezing

Control

Freezing

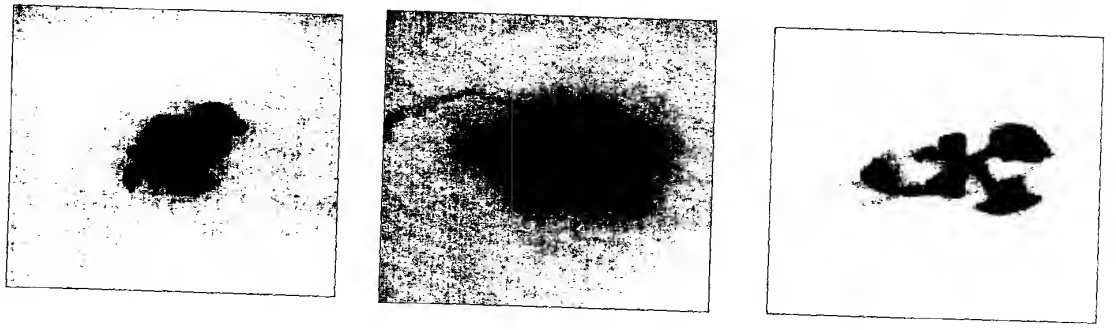
Figure 12

PpCK-2
Drought

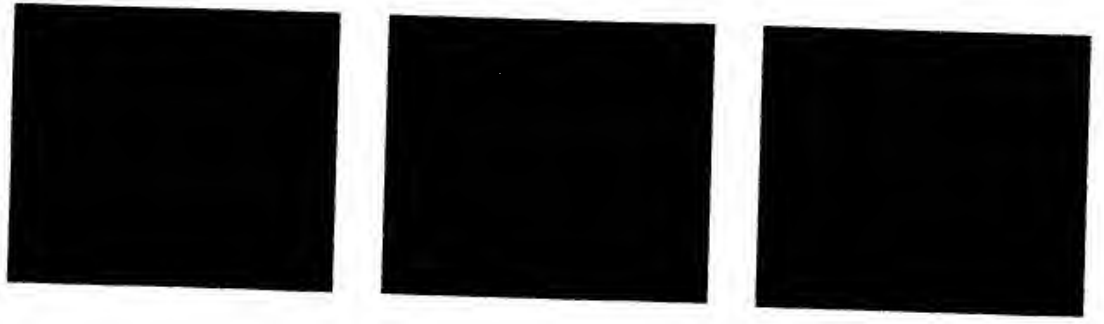


Control
Drought

Figure 13

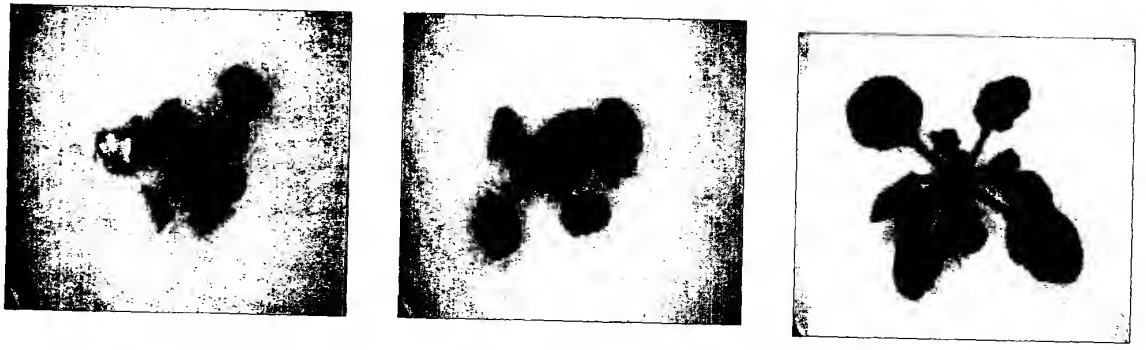


PpCK-3
Drought

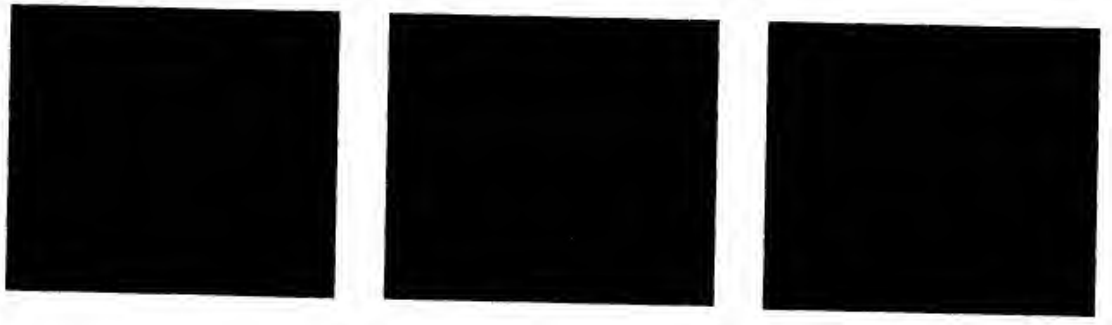


Control
Drought

Figure 14

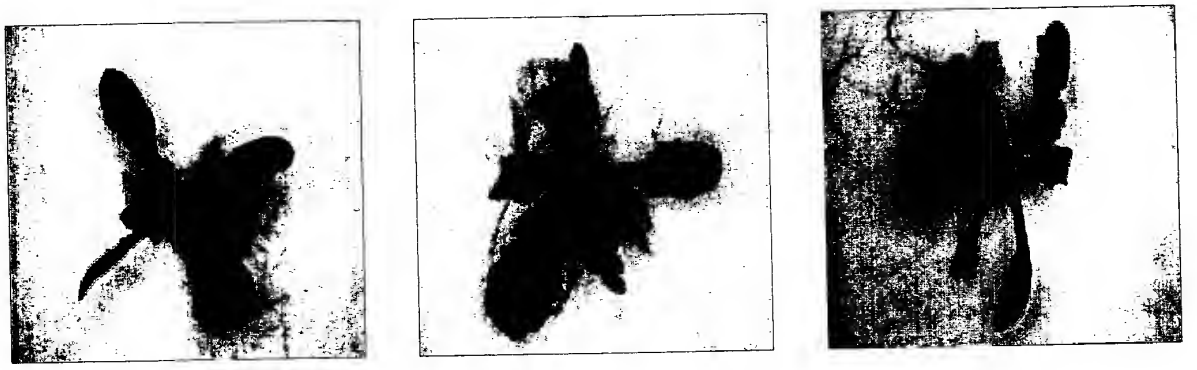


PpMPK-2
Drought



Control
Drought

Figure 15



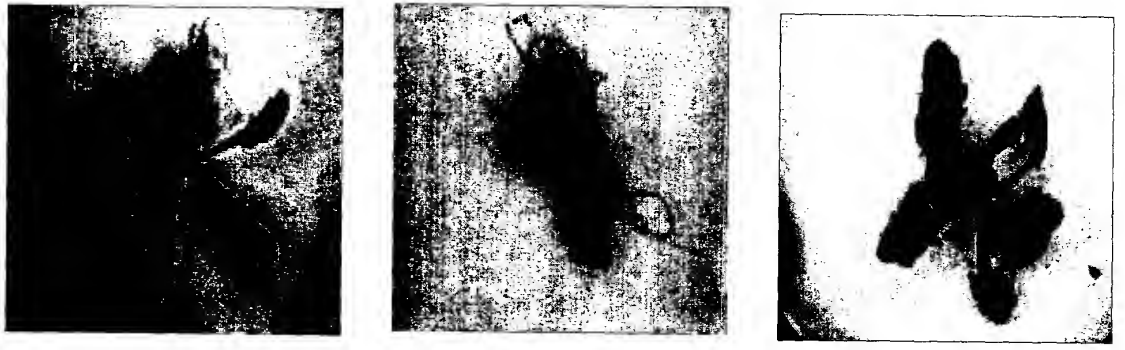
PpMPK-2

Freezing

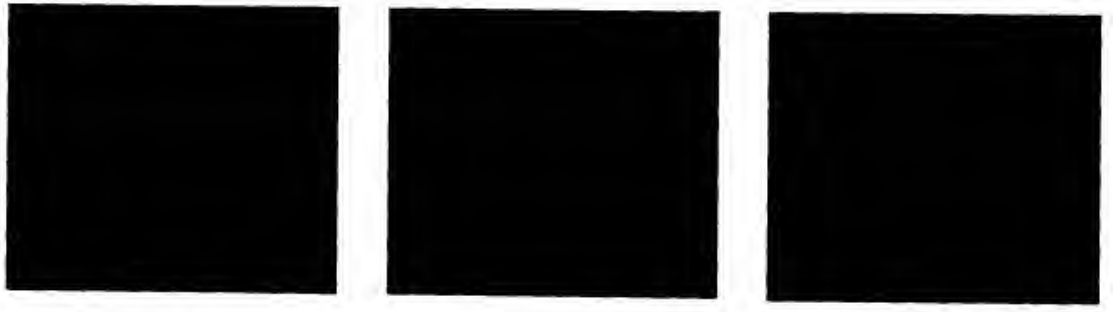
Control

Freezing

Figure 16



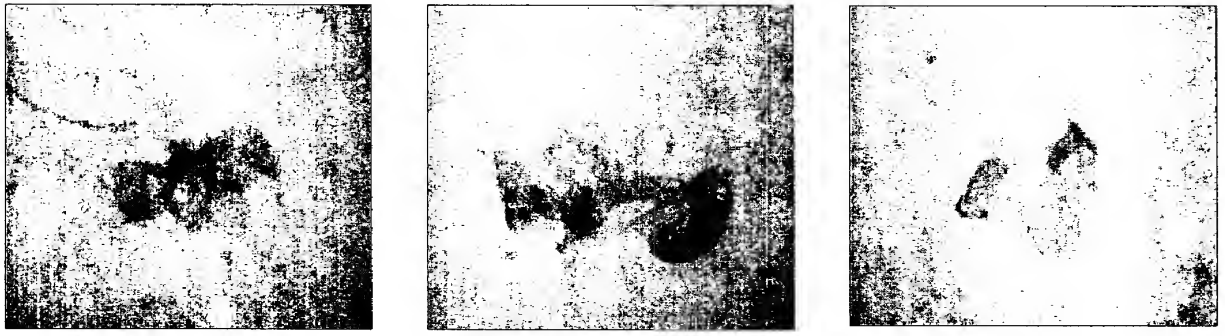
PpMPK-3
Drought



Control
Drought

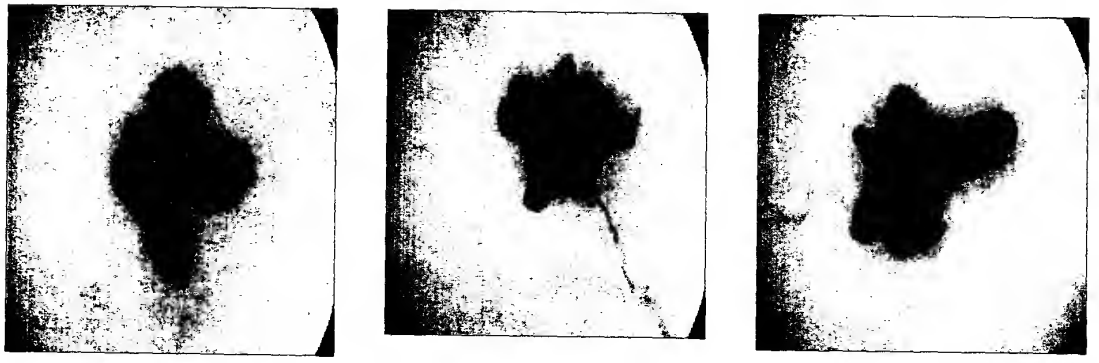
Figure 17

PpMPK-3
Freezing



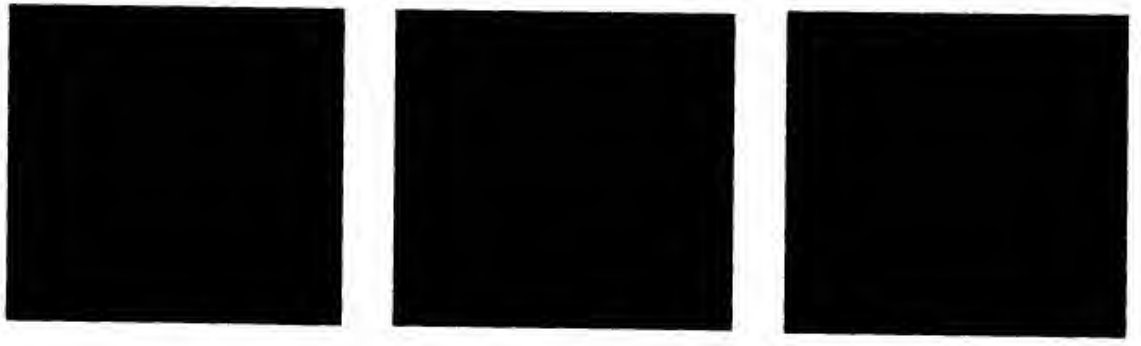
Control
Freezing

Figure 18



PpMPK-4

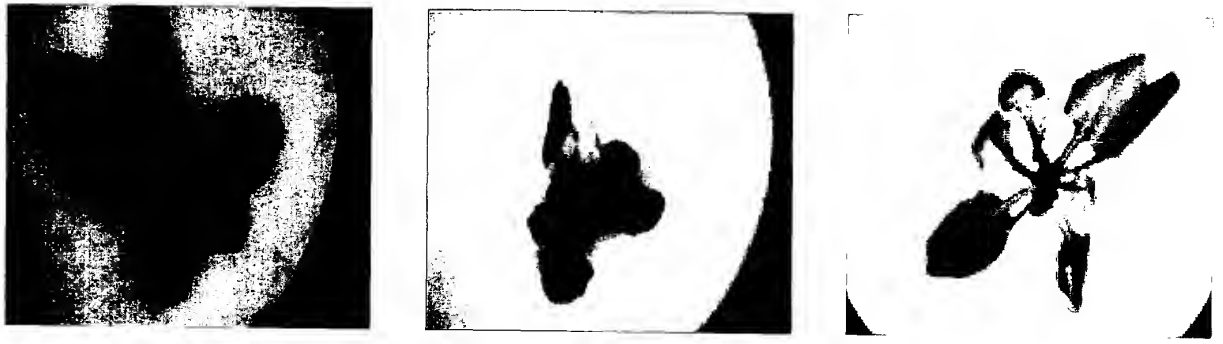
Drought



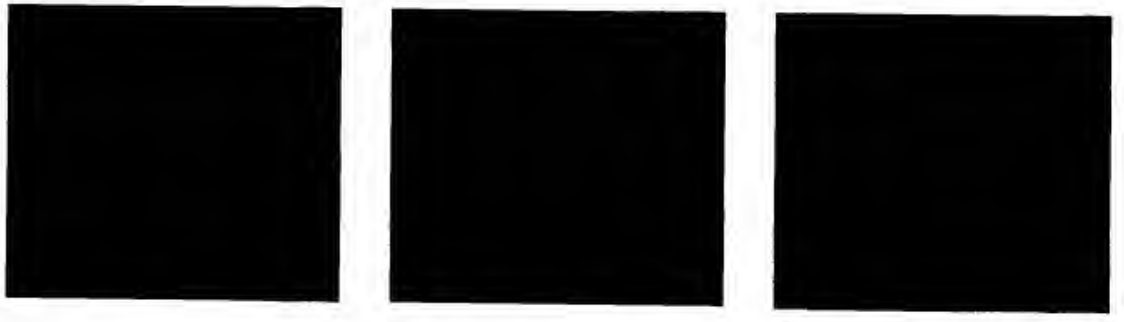
Control

Drougt

Figure 19

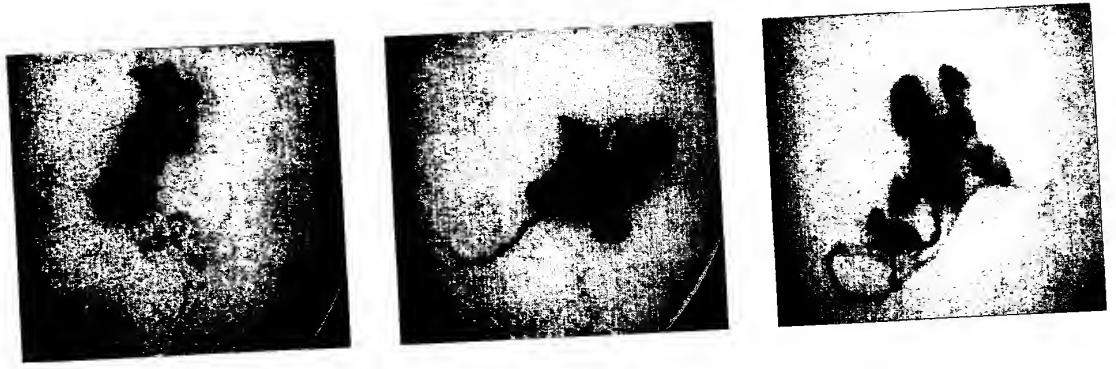


PpMPK-5
Drought



Control
Drought

Figure 20



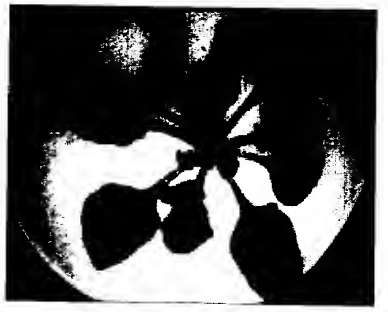
PpCPK-1

Drought

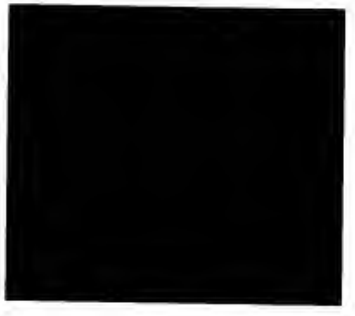
Control

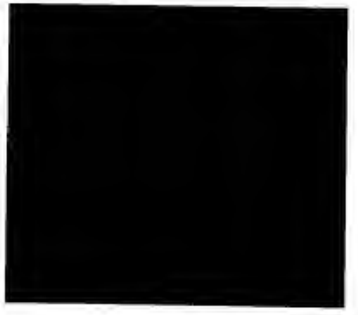
Drought

Figure 21



PpCPK-2
Drought





Control
Drought